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CONTENTS.

	Page.
Editorial Notes	721
Kentucky Coal Mines	722
Mineral Products of Algiers	722
New Publications	722
Books Received	723
Correspondence	723
The Quartz Mines of Sarela, Central Siberia	724
* Dr. C Hoepfner	725
Mr. T. A. Rickard on Stratton's Independence	725
Pittsburg-St. Lawrence Route for Steel Export . . Waldon Fawcett	727
Lake Rates for the Season	727
* The Pittsburg & Buffalo Coal Company's Mines	729
Abstracts of Official Reports	730
Recent Decisions Affecting the Mining Industries	731
* The Pratt-Wethey Screen	731
The Mineral Production of India	731
When to Begin Treatment of Cyanide Tailings, Henry M. Crowther	732
* Elastic Suspension for Drilling Rods	733
* The Austin Gyratory Crusher	733
Mineral Collectors' and Prospectors' Column	734
Questions and Answers	734
* Patents Relating to Mining and Metallurgy	734

* Illustrated

Personal..... 736
Obituary..... 736
Societies and Technical Schools..... 736
Industrial Notes..... 736
Trade Catalogues..... 736
Machinery and Supplies..... 737

Mining News.

United States:
California 737
Colorado..... 737
Idaho..... 738
Illinois..... 738
Michigan..... 738
Minnesota..... 739
Missouri..... 739
Montana 739
Oregon..... 740
Pennsylvania.... 740
South Dakota.... 740
Utah 740
Washington..... 740
West Virginia.. 740
Wyoming..... 741

Foreign:
Canada 741
Mexico 741

Markets.

Slate:
New York. 741

Coal:
New York..... 741
Birmingham . 741
Chicago..... 742
Cleveland..... 742
Pittsburg..... 742
Foreign Coal Market. 742

Metals

Iron:
Pig Iron Production..... 742
Birmingham.. 742
Buffalo 742
Chicago..... 742
Cleveland..... 742
Philadelphia.. 742
Pittsburg..... 743
New York..... 743

Gold and Silver Prices, Statistics, Imports and Exports 743
Foreign Coins. 743
Copper 744
Tin..... 744
Lead 744
Spelter..... 744
Antimony..... 744
Nickel..... 744
Platinum..... 744
Quicksilver... 744
Minor Metals. 744

Chemicals and Minerals;
New York..... 745
Liverpool..... 745

Mining Stocks.

Market Reviews:
New York..... 745
Boston 745
Colo Springs.. 745
Salt Lake City 746
San Francisco 746
London..... 746
Paris 746

Meetings..... 746
Dividends..... 746
Assessments. .. 746

Stock Quotations:
New York,.... 747
San Francisco 747
Boston 747
Philadelphia.. 747
Toronto. 747
Salt Lake City 747
Spokane. 748
Colo. Springs. 748
Montreal..... 748
Mexico..... 748
Denver.. 748
Paris 748
London..... 748

Mining Co's,
List of..... 749

Current Prices:
Minerals, Chemicals, etc..... 750

Alphabetical Index to Advertisers.....Page 20
Classified List of Advertisers.....Pages 14, 15, 16, 17, 27

We wish to state that Mr. H. F. Evans, of Rossland, British Columbia, is no longer connected with the "Engineering and Mining Journal" or the Scientific Publishing Company in any way; and that he has no authority to make contracts, to take orders or to receive money on account of the "Journal" or the company.

The total traffic passing through the Sault Ste. Marie Canals from the opening of navigation up to December 1st is reported at 25,270,538 short tons of freight. The tonnage for the first days of December, up to the time when the canals were closed by ice, is not yet reported, but it is estimated that it will bring the total for the year up to about 25,900,000 tons, or about 630,000 tons more than in 1899. The figures show the great importance of the traffic on the Lakes, especially when we remember that they include the business to and from Lake Superior alone, and take no account of the business of Lake Michigan and Lake Huron, which does not pass the Sault. Of the tonnage this year about 75 per cent. was iron ore, while a considerable part of the remainder was coal.

While the full figures for the shipping season have not yet been made up, it is certain that the shipments of iron ore from the Lake Superior Region have not varied far from 18,750,000 long tons. This is about 500,000 tons more than last year, but falls short considerably of the 20,000,000 tons expected and predicted by some authorities early in the season. The general slackening in the iron trade during the summer, and the diminished activity of the blast furnaces account for the reduction from the anticipated shipments. Nevertheless, the total is the largest ever reported and is far in excess of that for any previous year except 1899. The increase this year over last has come almost wholly from the Mesabi Range, and the mines of that range could have shipped without difficulty 1,000,000 tons more if the demand for it had been pressing.

Wall Street was interested this week by positive statements that a consolidation agreement had been finally concluded between the American Smelting and Refining Company and Messrs. M. Guggenheim's Sons. It was stated as an assured fact that such a contract would be passed on at a meeting of the directors of the American Company held on Tuesday of this week. As is often the case, Wall Street did not prove a true prophet, and no such action was taken, though it was decided to call a special meeting of the stockholders in January, to authorize an increase of the capital stock of the company to $100,000,000, part of this being presumably for the purchase of the Guggenheim plants. The fact is, as we have heretofore noted, that the question of acquiring the Guggenheim plants has been more or less discussed ever since the organization of the American Smelting and Refining Company; but no definite result has been reached. The two concerns are not antagonizing each other in any sense, but for various reasons the members of the Guggenheim firm have preferred to remain independent.

A notable feature in the copper trade of the present year is the relatively small increase shown by the monthly reports of the producers. Thus the statement of Mr. John Stanton, who acts as statistician for the companies, gives for the United States in November a total output of 23,276 long tons of fine copper, which is only 259 tons more than in December of last year, a gain of 1.1 per cent. For the 11 months ending with November the production reported was 246,763 tons, which is greater than that of the corresponding months of last year by only 8,545 tons, or 3.6 per cent. Moreover, the reporting companies showed an actual decrease this year of 855 tons, or 0.4 per cent., the gain coming entirely from the outside sources—the smaller non-reporting mines and the smelting companies—which are credited this year with a gain of 9,400 tons, or 33.6 per cent. It appears, therefore, that the active demand did not stimulate production in the older mines as might have been expected. A parallel result is shown in the important European mines, the total production from these for the 11 months having been 81,848 tons, or almost exactly the same as last year; the difference being a decrease of 32 tons.

The progress which the utilization of blast furnace gases in the production of power is making in Europe may be estimated from the statement that the Cockerill Company, and other companies licensed to use its plans, have under construction at the present time engines aggregating a total of 35,000 horse-power. Some of these are blowing engines, but the majority are intended to operate dynamos and furnish electricity for light or power. A list of plants already in operation given by a German contemporary recently includes nine in Germany, one in Russia and one in Great Britain, besides the Cockerill plant at Seraing, in Belgium. The largest of these plants is at Hoerde, in Westphalia, where two engines of 600 horse-power each operate the blowers,

and two, of 1,000 horse-power each, run dynamos and furnish electricity which is used in the manufacture of calcium carbide. The Russian plant, recntly erected at the Toula furnaces, in the Moscow District, has 2,400 horse-power, including three engines of 600 horse-power each for blowing and three of 200 horse-power each which operate the electric plant. The plants now in operation at Seraing and at Differdingen in Luxemburg are each rated at 2,000 horse-power; and both are to be increased in size.

The labor difficulties at the famous Penrhyn slate quarries in North Wales have once more broken out, and the results promise to be of a very far-reaching nature. Three years ago the quarries were closed for several months while Lord Penrhyn's managers and the supporters of the labor union fought over trivialities. The points of difference were only patched up after the whole affair had assumed the proportions of a great public scandal. The dispute has broken out afresh, and Lord Penrhyn has this time definitely shut up the quarries and the workmen are leaving the district to find employment elsewhere. Many have gone to the South Wales coal-fields and others to the new harbor works at Holyhead

In the Welsh quarries the workmen are not employed directly by the owners or lessees, but by a multitude of petty capitalists or sub-contractors according to the old-fashioned system. The interests of various sets of people, are, therefore, quite complicated, and the points in dispute often seem trivial to the outsider. The Welsh character also does not lend itself easily to conciliation. Absentee landlordism and the real or imagined overbearingness of the Anglo-Saxon are as much resented by the Celtic race in Wales as they are in Ireland, though in a perfectly law-abiding manner. It is, however, surprising that Lord Penrhyn cannot exercise sufficient ingenuity to make it unnecessary to close down permanently, even if the remedy was of a radical and drastic nature. One result of this closing down will be to give American slate producers an additional opportunity for obtaining a foothold in the English markets, of which we may be sure they will not be slow in availing themselves.

An event of some importance, which has passed with very little notice, has been the award in the disputed boundary case between French Guiana and Brazil. While this dispute has really existed for many years, it was not considered of much importance until a few years ago; since then there has been much diplomatic discussion between France and Brazil until the two Governments finally agreed to refer the case to Switzerland as arbitrator. The Swiss Government has now given its decision, which is mainly in favor of Brazil, and awards to that country nearly all the territory in dispute, about 240,000 square miles.

Up to a few years ago this territory was almost unknown and had very few civilized inhabitants. The discovery by explorers from Cayenne of important gold placers gave it increased importance. The greater part of the gold reported from French Guiana for the last three or four years has come from the disputed territory. It is probable that some arrangement will be made by which the French companies will be enabled to continue their exploitation of the placers; especially as the Brazilians are not likely to undertake any work of the kind. This, however, remains to be settled.

The boundary in question rested on the interpretation of an old treaty between France and Portugal, which was made by diplomats who probably had an extremely indefinite idea of the geography of the country. Both parties made elaborate statements of the case to the Swiss arbitrators, and these are said to have constituted very interesting studies in historical geography.

KENTUCKY COAL MINES.

In common with nearly all the coal-producing States, Kentucky showed in 1899 a large increase in output and a generally prosperous year. The output of coal from the mines of the State was, in short tons:

	1898.	1899.	Changes.	Per ct.
Bituminous coal	3,492,243	4,469,100	I. 976,857	28.0
Cannel coal	49,889	36,339	D. 13,550	27.1
Totals	3,542,132	4,505,439	I. 963,307	27.2

The increase in production was very evenly distributed through the State. The decrease in the output of cannel coal is attributed to light demand, the qualities of that coal being but little known or appreciated.

Coke was made last year by four companies, the total output being 55,581 tons, a gain of 34,187 tons over 1898. The largest producer was the St. Bernard Coal Company at Earlington. Two new coke plants were established during the year.

Machine mining is in favor in Kentucky, and we find that 42.5 per cent. of the coal mined is by machine. There are 21 companies using machines, and the total number at work was 225. There were 56 new machines installed at various mines. Both electric and compressed air machines are in use.

The greatest number of employees at work in the mines during the year was 9,651, in December. The average number employed was 7,529, an increase of 1,130 over the previous year. Taking the latter number we find that the average coal mined per employee last year was 594 tons. The number of accidents is reported as follows:

	Killed.	Seriously hurt.	Slightly hurt.	Totals.
Fall of top	4	12	11	27
Fall of coal	1	2	4	7
Mine cars	1	2	10	13
Gas explosion	..	2	1	3
Blasting	1	3	4	8
Miscellaneous	..	6	9	15
Total number	7	27	39	73
Average per 1,000 employed	0.93	3.59	5.18	9.70

The falls of top were, as usual, the chief cause of accident. Last year was unusually free from gas explosions; though there have been disastrous explosions in Kentucky mines. The year showed an increase in casualties, of 1 killed, 3 seriously hurt and 16 slightly hurt; which may be readily attributed to the large increase in the number of men in the mines, and the probable employment of many inexperienced men. At least two of the deaths and nearly half of the injuries are attributed to the negligence or recklessness of miners or laborers themselves.

MINERAL PRODUCTS OF ALGIERS.

Aside from its strategic position as gateway to the north of Africa, Algiers is rapidly coming into further prominence by reason of its mineral wealth. For in this small colonial province, heretofore regarded as a charming place for tourists, but of little real commercial value, there have been found quantities of minerals yet untouched by the pick of the miner.

Altogether up to the present time concessions have been granted in Algiers for the working of 52 mines. Already 14 are in operation, 5 in the department of Algiers and 9 in the province of Constantine; the most important of the last being the iron, zinc and lead mines. Their output during the last few years has averaged 500,000 tons per annum, of which 450,000 tons comprise the production of iron ore alone. The yield is steadily growing, and bids fair in a reasonable space of time to attain large proportions; since not only will the capacity of the present mines admit of a considerable increase, but prospecting, with a view to obtaining new concessions, is being systematically carried on. The Guerronma Mines, which were abandoned in 1893, have recently been again started up; and these merely head the list of a score of new undertakings contemplated in the near future.

Of late years it has often happened in Algiers that newly opened mines, bearing promises of fulfilling the highest expectations, have been abandoned, not because they had given evidence of unprofitableness, but because of lack of capital on the part of the companies in possession. Now, however, most, if not all, of the mines both being operated and acquired are backed by heavily capitalized corporations, capable of handling their undertakings successfully and profitably.

There are, however, as already intimated, many large and valuable deposits, whose development has heretofore been unthought of, mainly because of their distance from the sea and the consequent want of transportation facilities. This want will soon be supplied by the various lines of railroads already planned, which, when completed, will contribute the, so to speak, missing link in Algeria's mining prosperity.

In addition to iron and other ores, Algiers possesses another valuable commodity, namely, phosphate. Although this product has already attained wide prominence, its increase may also be classed as a possibility of the future. The working of the Algerian phosphate deposits was first undertaken in a moderate way in 1813, with the lease of the Djebel Djir mines. These deposits are at present being developed by the firm of Crookston, while the mines of Djebel Kuif are in the hands of the Constantine Phosphate Company and those at Tacqueville are controlled by the Societe Francaise des Phosphates de Tebessa. During the short period that has elapsed since the opening of the deposits the output has grown to extraordinary dimensions. For example, in 1893, the first year, a production of 5,118 tons was attained; in 1894, 47,957 tons; in 1896, 220,017 tons and 1898, 250,000 tons. Since then a number of new deposits have been opened and something like 20 permits have been granted to private persons for prospecting; so that in time Algiers may look forward to securing a prominent position among the phosphate producing and exporting countries of the world.

NEW PUBLICATIONS.

"Annual Report of the Mine Inspector for the Territory of New Mexico, for the Year Ending June 30th, 1900." John W. Fleming, Inspector. Washington; Government Printing Office. Pages, 56; illustrated.

That the Territory of New Mexico has considerable coal resources and that coal mining is likely to prove a profitable occupation for years is shown by a review of this report. The Territory in the fiscal year ending June 30th, produced 1,187,334 tons of coal valued at $1,837,165, through the labor of 2,015 employees. But for a scarcity of miners the

output would have been larger. The smaller mines, as in other States, are worked irregularly and the equipment is not of the best, but the larger mines seem to be well managed and well equipped. The number of fatal accidents is larger than it should be—15 last year—or one for every 79,156 tons of coal mined. Nine deaths were due to falls of coal or rock. The inspector states that these accidents are in part due to the carelessness of the men, who, though provided with props, neglect to keep the ground timbered close up to the headings. There were 25 non-fatal accidents, of which 18 were due to falls of rock and coal. There were no accidents from explosions of dust or gas. Most of the coal produced is bituminous; the production of other coal is quite large. One mine in Santa Fe County produced 41,600 tons of anthracite.

"Petroleum in California." Compiled by Lionel V. Redpath. Los Angeles, Cal.; L. V. Redpath. Pages, 134; illustrated. Price, $1.

Although the existence of petroleum in California has long been known, its active exploitation is a comparatively recent matter. The early excitement of 1865 lasted only a short time, and for over 30 years only three or four companies were at work, while there was little or no extension of the known oil-bearing territory. The discoveries in Los Angeles and vicinity a few years ago renewed the interest, but it did not become a boom until the finding of oil on Kern River and in other sections led people to believe in the future of the oil country. Mr. Redpath has compiled much interesting information on oil in his book, including a history of the earlier wells; papers by the State mineralogist on the asphalt and petroleum of California; information as to recent work in various sections of the State; a list of the companies organized to operate oil wells and to prospect for oil up to the date of publication of the book. It is written more for general information than as a scientific work, and will be of service to all who have any interest in California oil. Apparently much pains have been taken to ascertain facts and the statements made are careful and generally conservative.

"The Johnstown Centennial, 1800-1900. Early Iron Enterprises in Cambria, Somerset, Westmoreland and Indiana Counties, Pennsylvania." By James M. Swank. Philadelphia; published by the Author. Pamphlet; pages, 16.

This is a reprint of an address prepared for the celebration of the one hundredth anniversary of the founding of Johnstown in Pennsylvania. Mr. Swank, who has a wide and thorough knowledge of the history of the iron trade and manufacture in this country, and who is always interesting as a historian, has gathered a great deal of information about the early history of Western Pennsylvania. A hundred years ago iron was made in the little charcoal furnaces and forges of the Juniata Valley, and was carried on horseback and in flatboats to Pittsburg, not then a manufacturing city, but simply the starting point for the river voyage down the Ohio. This was the beginning of the great iron industry, which has passed to some extent westward and found its center in the modern city of Pittsburg. Johnstown, which was from the first engaged in the iron industry, is now the seat of the great mills of the Cambria Steel Company. The coke blast furnaces, the Bessemer converter and the open-hearth furnace, and the rolling mill long ago superseded the charcoal furnace and forge; but full credit should be given to the pioneers, and it is interesting to read Mr. Swank's record of their work.

"Preliminary Report on the Copper-Bearing Rocks of Douglas County, Wisconsin." By Ulysses Sherman Grant. Madison, Wis.; published by the State. Pages, 56; illustrated.

This is Bulletin No. 6 of the Economic Series No. 3, prepared and published by the Wisconsin Geological Survey. It consists of a careful report on the Douglas and St. Croix ranges in Wisconsin, a region in which discoveries of copper have frequently been reported. The conclusions drawn from all the facts collected and observations made are thus given: "The facts which bear upon the question of the value of the copper deposits on the Douglas and St. Croix ranges may be summarized as follows: (1) The identity of the rocks with those of Keweenaw Point. (2) The presence of native copper. (3) The presence in places, of sufficient copper to form an ore of value. (4) In most of these places exploration has shown that the rich rock is only of limited extent. (5) In a few places exploration has not gone far enough to determine the extent of the rich rock. (6) The bunchy distribution of the copper in any layer. (7) The presence in a given thickness of rock of several amygdaloidal layers, rather than one layer. From a consideration of these it is impossible, with our present knowledge, to answer satisfactorily the question as to whether or not copper deposits of economic value will be found in this district; but to the present time no such deposit has been shown to exist."

Upon the whole the outlook for copper in this region is not very encouraging. Prof. Grant's work has been carefully done, and it is of value, since it is a service to the prospector to tell him where not to go, and thus save his time and work, and direct his efforts to regions where he is likely to obtain some return for his labor.

"Emploi des Explosifs dans les Mines de Houille de Belgique. Statistique Comparative." Par Victor Watteyne and Lucien Denoel. Brussels, Belgium; Polleunis & Ceterick. Pages, 50.

The chief point about this report, and the tables which accompany it, is the remarkable decrease shown in the death rate in Belgian coal mines. During the 10 years from 1890 to 1899, both inclusive, the total number of accidents was 63, and the number of underground employees killed was 28 per 1,000 employed; the number resulting from the use of explosives being 35, and the number killed in them 7 per 1,000. In the 10 years from 1880 to 1889, there were 68 accidents, and the number killed was 58.1 per 1,000; while the accidents from explosives numbered 43, with a death rate of 52.8 per 1,000. Thus the proportion of killed by explosives in the last decade was less than one-seventh that shown in the preceding 10 years. This favorable change is attributed partly to the substitution of safety explosives for black powder, which was formerly used almost exclusively in Belgian collieries. During the earlier of the two 10-year periods, the Borinage, or Couchant de Mons District, the miners of which form one-fourth the whole number in the kingdom, entered for one-third into the number of accidents and for more than one-half into that of fatalities; but shortly after 1887, when 120 lives were lost by a single fire-damp explosion, safety explosives and the mechanical methods reduced to an insignificant amount the quantities of dangerous explosives that were formerly used. The consequence is that during the last 10-year period the total number of deaths from fire-damp explosions was 24, of which 7 only can be attributed to the use of explosives. The report states that electricity is coming more and more into use for the firing of shots, especially in the Liege and Charleroi districts.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

"A Manual of Assaying." By Alfred Stanley Miller, New York; John Wiley & Sons, and London; Chapman & Hall, Limited. Pages, 96; illustrated. Price, $1.

"Moody's Manual of Industrial and Miscellaneous Securities." First Annual Number, 1900. John Moody, Editor. New York; The O. C. Lewis Company. Pages, 1,108. Price, $5.

"United States Commission of Fish and Fisheries. Report for the Year Ending June 30th, 1900." George M. Bowers, Commissioner. Washington; Government Printing Office. Pages, 192.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials will only be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Copper in Mercer County, New Jersey.

Sir: When Professor Cook was State Geologist of New Jersey he caused careful inquiry and survey of the State to be made to ascertain whether any copper deposits worth working remained within its borders, and with such discouraging results that hope of finding the ore was abandoned. His careful examination and his exhaustive report were accepted as conclusive not only by his successors in office, but also by those interested in the production of the metal. Recent developments in this neighborhood, however, seem to show that a body of ore exists here, and arrangements are making for mining it. Mr. Charles W. Clifford, who has charge of the metal department of the American Lamp and Brass Company, of Trenton, has associated others of that city with him, and after purchasing a tract of land has commenced operations.

About 1 mile north of Pennington is a range of hills crossing the State from New Brunswick to Moore's station on the Delaware River, and termed by the State geologists the "Pennington Trap." It springs out of the country rock (red shale of the triassic period) which has been metamorphosed. Between the trap and the metamorphosed shale lies a body of copper ore, the length of which has not yet been determined.

At the foot of Mount Woosamansa, better known as Round Top, the entire formation—the trap, the ore vein and the metamorphosed shale—has faulted; and a few shots of dynamite, applied by Mr. Clifford and his associates, have laid bare a vein of copper ore.

The full length of the vein has not yet been ascertained, but surface indications, by careful examination, are found for a distance of 11 miles. These surface indications consist of the trap formation on the one hand, the metamorphosed shale on the other, a slight depression between them along which are strewn pieces of weathered rock studded with cupriferous nodules, which are found also imbedded in the soil; and the uncovering of the ore itself at five different points in this depression, the distance between the extreme points of discovery being about 11 miles. The strike at the Clifford development is north (about) 65° west, and differs, as does the course of the huge trap dike, from the strike of the country rock, which is north 55° west. Indeed, the course of the vein conforms with that of the trap throughout its entire length. The dip of the vein is clearly shown where the Clifford party have blasted, and is estimated at about 25° toward the northwest, no clinometer being at hand.

Besides the ore uncovered along the line of the strike, and between the trap and the metamorphic rock, copper has been found in other near-by places. These outside veins appear to shoot out from this backbone. The "thin line" of native copper near New Brunswick, to which Dana refers in his "System of Mineralogy," has long been supposed to lead to a larger deposit and the question now arises whether this is not the deposit. P.

Pennington, N. J., Nov. 3, 1900.

[The State Geological Survey in its last report (1899) refers to copper deposits at Arlington and Somerville, but makes no mention of the Pennington ore.—Editor E. & M. J.]

One-Legged Mining in Georgia.

During a recent trip through three of the eastern counties of Georgia the writer saw something of milling methods in one of the less well-known mining districts. The following account may partially explain the extremely slow advance of gold mining in Georgia at present, in spite of the ease with which tempting out-crops can be found, and the excellent record for gold production made by the State in the times of slave labor.

In the counties of Columbia, McDuffie and Lincoln the gold occurs in well-defined quartz reefs, which are very capriciously oxidized. In some veins the gold is almost entirely free milling to a depth of several

hundred feet, while in near-by deposits the sulphurets carry nearly all the values from the surface down. As a rule the veins are nearly barren quartz, carrying occasional pay shoots. The country rock is a more or less weathered feldspathic conglomerate, invariably and mysteriously called "slate" by the natives. The permanent water level stands at about 65 ft. below the surface. A fair total average of the ores of the section appeared to the writer, from his own assays and many inquiries, to be about $5 per ton, with concentrates running between $25 and $50 —typical low grade material, though capable of really profitable treatment on a fairly large scale by ordinary stamp amalgamation and barrel chlorintion of concentrates.

The gold occurs for the most part in coarse particles which make uniform, accurate assays out of the question, and startling heavy buttons far from uncommon. A typical example of the attitude into which assays, rendered preposterous by stray particles of gold, have put many owners of immense land in this section, is the following:

Mr. X. owns a couple of hundred acres of land, on which he has located, by shallow trenches, half a dozen or more gold-bearing veins, varying from 2 in. to 2 ft. in width. On the largest vein he has sunk a shaft nearly 25 ft., and assayed samples from it at that depth; also samples from some surface cuts on the smaller veins. His results run from about $50 up to $210 per ton (though later and more reliable figures have given 20c. to $6.50) and he immediately invites buyers from the North to see his property, asking them a goodly number of thousand dollars for it. He flatly refuses to give any option, or allow a stroke of development work at the investor's expense, deeming his own 25-ft. shaft quite sufficient. Mr. X's position is quite in accordance with local sentiment, and is absolutely impregnable to mere argument.

What are the chances of that land's being developed? This is not an unusual case, and illustrates one of the reasons why so little is heard from the counties above mentioned.

But by far the greatest hindrance to the development of these deposits, lies in the ignorance of those working them about even the first principles of stamp milling. One mine, and its mill, which is run by the water-power of Little River, has been worked till recently by a woman, though now it is leased by Westerners. Mrs. Y. has sent to the Charlotte assay office in some years as much as $15,000 worth of gold. Her mill of 10 light stamps boasted nothing so new-fangled as concentrating tables, though about half the values were in the sulphurets, and her plates are said to have resembled a well-kept lawn in color.

At the mill of one of the best-known mines in the district, the plates were dark and dull, and the pulp banked solid on them in places. On my asking whether those plates were not in pretty fair shape, the superintendent told me yes; and that when the mill was started up under his direction, they were just as bright and shiny as a mirror. I afterward learned that that was just a month before.

The use of lye or cyanide is apparently looked at askance throughout the district. Cold chisels and sledge hammers are found very useful in removing amalgam from the plates. At the one mill where the writer saw concentrating tables, it is almost superfluous to say that what appeared to be a half-and-half mixture of pyrite and quartz was considered clean concentrates.

As far as I learned, there was not an assay outfit in commission in the three counties. Several mills were "going to have them soon," but at last accounts, amalgam on the plates was the only criterion of the values of the ore.

It is evident that where such milling methods prevail (and the mining methods they imply) $3 must go "down the creek" for every $1 that goes to the mint. If mills can run year after year under such conditions, why should not up-to-date methods put Georgia gold production back to where it was in the ante-bellum days of surface gouging by slave labor. R. R.

Chicago, Dec. 15, 1900.

THE QUARTZ MINES OF SARELA, CENTRAL SIBERIA.

A visit to this locality was made during the month of September last, by a party of Americans interested in gold mining, accompanied by Mr. C. W. Purington, mining engineer. The party consisted of Mr. W. S. McCornick, a mining man of Salt Lake City, Mr. N. C. Egbert, of Springfield, Mass., Mr. C. C. Ivanitsky, a large operator of Siberia, and Mr. Purington. The visit is described by United States Consul Thomas Smith.

The quartz-mining district lies about 100 miles to the south of the line of the Trans-Siberian Railway and in the mountains lying about the headwaters of the River Sarela, which flows into the Nyus, and this again into the Chulim, about 200 miles west of the Yenisei River. The party proceeded north from the town of Chibakee, the residence of Mr. Ivanitsky, and, turning off to the west of the main post road from Chibakee to the railroad, crossed the main Chorny-Nyus River and followed up the valley of the Sarela. Along the lower course of this stream, the valley is more than a mile in width, perfectly flat, and an immense gravel bed. Low cliffs of limestone border the valley, the walls gradually approaching each other until near the head of the stream, where an amphitheater has been formed, fully 6 miles in diameter, with mountain walls rising to 2,000 ft. above the meeting points of the fire creeks forming the main stream. The main valley and its slopes are heavily timbered with birch, cedar, larch and fir; but the domelike summits of the mountains are bare of all vegetation, except thick reindeer moss and bunch grass. The limestone, which has a great development farther east, here gives place to graphitic schists and dikes and masses of fine-grained porphyry. The creeks forming the headwaters of the Sarela give abundance of water, and the grade of the valleys in this upper portion is about 10 per cent.

It is only within a year that search for gold-bearing quartz veins has been made in the vicinity of the Sarela. The first discovery of auriferous quartz took place directly in the trail leading to the Altai Region to the west. Search revealed more fragments of white quartz in the vicinity, all showing free gold, and finally a strong lead was uncovered. This was prospected along its outcrop, the strike being in a northwesterly direction for more than 1,000 ft. At the time of the visit of the Americans, the vein was sufficiently uncovered to show an average width of 10 ft., and free gold was seen in tne quartz wherever pieces were broken off. A sufficient extent of this vein has been exposed to warrant the statement that the visible gold does not occur merely in a narrow shoot, but that here is a shoot with a length of at least 1,000 ft.

This extraordinary vein led to others being looked for, and the result was that in at least 20 different places about the sides of the great amphitheater, quartz showing free gold was found, in many cases by merely turning over a few square feet of reindeer moss with a shovel or a pick. Farther to the northeast of the vein just described, a still wider vein was uncovered and is being worked by Mr. Podvintseff, of Ekaterinenburg. This vein is now exposed down the side of the mountain by an open cut 200 ft. long and oy about 100 ft. of tunneling. The exposures show a mass of quartz 20 ft. wide from wall to wall, with very little other matter. The work has been done in a most unskilful manner, and the great mass of quartz between the schist walls on the side of the mountain presents a most extraordinary appearance. About 500 tons of this material have been worked in a crude mill, and, although free gold is seldom seen, the material has averaged $18 to the ton. A new and better mill is in process of erection, but it is placed in a poor position and is of such small capacity that very little can be expected from it.

The majority of the quartz finds in this valley have been made in high places, the situation of the lead outcrops being such as to facilitate the tramming of the ore down from the workings to a mill located at the meeting point of the five streams, by means of converging wire-rope gravity lines. The topography is also favorable for the running of tunnels at comparatively low levels. Water power being practically unlimited in quantity, timber of excellent quality available, and winter freight rates exceedingly low ($5.50 per ton from the railroad), the district of Sarela appears to have many advantages as a mining country.

The quartz in all the veins yet uncovered exhibits the marks of decomposed sulphurets. It is therefore probable that the gold exists below the water level in the form combined with iron sulphide. Water level in this particular locality must, however, lie at considerable depth, so that the tenor of these veins may be thoroughly established by the use of small mills before the refractory portions of the veins are encountered. The walls are well defined, and the principal veins all strike in the same direction, showing that it is a country of continual and regular leads, and not of broken and irregular stringers. As the veins are for the most part nearly vertical and are subject to no sudden distortions of the structure, mining here should be a comparatively easy operation, and it is not likely that excessive amounts of timber would be required.

The climate in southern Siberia is perfectly healthy and, in some respects, most enjoyable. It is true that for five months in the year extreme cold is experienced, the temperature dropping as low as 30° and 40° F. below zero; but the fall of snow is very light. All machinery must be well housed and the mill heated in winter, but this is a small matter in a country with an inexhaustible supply of wood and where the cutting of it costs next to nothing.

The labor in this district is cheap. The total cost to the operator, including food and transportation to and from the mine, is less than $15 per month, yet the men were both intelligent and capable; hardy enough to work out the year round in this climate, to sleep if necessary on the hard ground without tents, and to live on dried black bread and soup.

It is quite certain that the discovery of quartz veins in Siberia has but just begun. The well-known lack of ambition of the Siberian to improve his own condition, except by the means employed by his father before him, and his disinclination to extend his sphere of knowledge must be taken as the principal cause of the lack of quartz operations up to this time.

MINERAL IMPORTS AND EXPORTS OF SPAIN.—The imports of fuel into Spain for the 10 months ending October 31st, were 1,394,951 tons coal, and 161,812 tons coke. Imports of metals included 4,169 tons pig iron, 6,069 tons wrought iron, 41,632 tons steel and 2,052 tons tinplate. Exports of minerals are stated by the "Revista Minera" as below, in metric tons:

	1899.	1900.	Changes.
Iron ore	7,160,495	6,586,409	D. 574,086
Copper ore	798,281	870,528	I. 72,247
Zinc ore	76,763	48,318	D. 28,445
Lead ore	8,766	3,466	D. 5,300
Salt	298,769	183,168	D. 115,601

Exports of metals were 20,116 tons pig iron (31,384 tons, 1899); 22,408 tons copper (23,731 tons, 1899); and 125,811 tons lead, against 133,861 tons last year.

NORWEGIAN WATERFALLS AND ELECTRICITY.—The larger rivers in Norway, south of Trondhjem, are estimated at their lowest capacity to yield about 263,000 H. P., which, by proper control of the watercourses, could probably be increased fourfold. At present something over 50,000 H. P. is believed to be all that is utilized for industrial purposes from the waterfalls.

The only electro-chemical process which has yet attained much importance in Norway is the manufacture of calcium carbide, for which the temperature required is estimated at about 3,000° C. (say 5,500° F.), and the current strength at from 4,000 to 10,000 amperes. In the carbide works at Sarpsborg a continuous furnace is employed, from which the carbide is tapped out at intervals, like metal out of a foundry cupola; here the furnace has been running continuously for 15 months without interruption. In another works an intermittent furnace is used, in which a large mould is filled with the carbide as it is produced, and as soon as full is removed and replaced by a fresh mold. By either method good carbide is obtained, so that the choice depends on the conditions of working.

DR. C. HOEPFNER.

Dr. C. Hoepfner, the well-known metallurgist, died December 14th in St. Joseph's Hospital at Denver, Colorado. He was on a business trip to Colorado when he was attacked by typhoid fever, to which he succumbed after a short illness.

Dr. Hoepfner was born February 8th, 1857, in the little village of Friedrichslohra, in Central Prussia. His education, under the supervision of his parents, was carefully conducted. His first acquaintance with the mining industry was formed as a boy in the Harz Mountains, where he had gone on a botanizing trip. After completing his preliminary studies, he took a medical course, but gave this up before completing it, and for some time studied chemistry, geology and mineralogy at Berlin. He received the degree of Doctor of Philosophy from the University there, and in the dissertation submitted for his degree advanced a general rule for the igneous formation of rocks, claiming that the solidification of igneous rocks begins always with the more basic minerals and ends with the acid ones. This theory met with no favor from the Berlin professors, but was later adopted by Prof. Rosenbusch, of Heidelberg, the eminent geologist.

In 1882, when 25 years old, Dr. Hoepfner went to Southwest Africa, his object being to engage in the organization of a German colony and in the exploration of the mineral resources of the country. In this work he was engaged for three years, meeting with many adventures, and having some narrow escapes from death by fever or accident. He succeeded in negotiating some advantageous treaties with native tribes for the German Government.

After returning to Germany he devoted himself to the development of some inventions in electro-metallurgy which he had made. After working these out, he took the position of manager of the chemical department of the well-known firm of Siemens & Halske, of Berlin, which he held for two years. After leaving the firm he again devoted his time to studies and investigations in electro-metallurgy. His first visit to the United States was made in 1893, when he came here to visit the

DR. C. HOEPFNER.

Columbian Exposition in Chicago. From that time on he spent the greater part of his time in America, where he found abundant openings for his work; though he made frequent visits to Germany.

For some years past Dr. Hoepfner had devoted himself to the study and treatment of complex sulphide ores, especially those carrying zinc. He devised several processes and took out numerous patents covering his inventions. He organized the Hoepfner Reduction Company, and directed the establishment of plants in England, Germany, Austria and the United States. He acted also as consulting metallurgist and was constantly and actively employed. His headquarters were at Hamilton, Ontario, and he naturally took much interest in the treatment of the Sudbury nickel ores. The process which he devised for these ores is now in use at Papenburg in Germany, where nickel ores from New Caledonia are mixed with copper ores and smelted to a matte, which is then refined by the Hoepfner process. His work on zinc ores engaged the larger part of his time, and the purpose of his visit to Colorado, where he died, was to arrange for the shipment of zinc ores from Leadville to reduction works in Germany. In a memorandum which we recently received from him he referred at some length to this part of his work, and to the ores of Colorado and British Columbia, which he expected to treat with success.

Dr. Hoepfner took out a large number of patents for ore treatment, in this country and in various European countries. He was a man of great ability and a profound student, an incessant worker and generally sanguine of success. He was always impatient of criticism, and regarded the opinion of others very lightly, having thorough confidence in his own abilities. This was apparent in his patents, which always contained the widest claims which could possibly be made. He did much valuable work, and his death at the early age of 43 years is much to be regretted.

MR. T. A. RICKARD ON STRATTON'S INDEPENDENCE.

We give below the full statement made by Mr. T. A. Rickard to the stockholders of Stratton's Independence, Limited, at the meeting in London, December 7th, as reported in the London papers:

"In January of last year I received a cablegram requesting me to make an examination of the Independence Mine, at Cripple Creek. The examination was made by me in person, with the aid of my own assistants, and it occupied about six weeks. The workings were carefully sampled, and the results were given in a report dated March 18th, 1899. In that report I gave an estimate of the ore reserves, giving them a valuation of $6,712,000. This estimate has since been well confirmed. Between the time of my examination and the transfer of the property to the existing company, and from the date of that transfer to the present time, the production of the mine has reached a total of $4,800,000. The ore actually in sight to-day, on a safe estimate, has been stated to be worth $2,300,000, so that there is accounted for a total amount equivalent to $7,100,000. My report concluded with the statement that the mine could produce $2,000,000 per annum for three years. It has produced $4,750,000 in the period of less than two years which have elapsed since my original examination, and it has $2,300,000 now in sight. All the ore which has been extracted, and all the ore remaining in sight, is accountable to the particular portion of the property considered in my original estimate, the general correctness of which has thus been demonstrated. In May, 1899, I was appointed consulting engineer to your company, which had just taken over the property. As consulting engineer I had no executive functions. The old management, having been reappointed by my directors, remained in control. Their reputation was good; the mine, previous to the transfer, had been well conducted by them, economically and carefully, and with as much system as was required by the simple conditions of one man's ownership. On taking up my duties I found out very soon that it would be difficult to modify the existing methods of management, especially underground. I made several suggestions, among them the proposal to keep a record of all the mine assays and to maintain an assay map, as well as to conduct the work generally with more system. As, however, the staff for the five years previous had worked the mine successfully in their own manner, it seemed not unnatural that new ideas should be slow of acceptance. In the meanwhile, the manager, on my visits to the mine, reported to me regularly as to the assay of the ore in the stopes and levels. I had no reason to doubt that these were correctly rendered, the output of the mine at that time confirming the figures given by him. When the matter of reports to be sent to London came up for consideration, I found out that the manager had been unaccustomed to report to Mr. Stratton, personal interviews rendering correspondence unnecessary. He had no experience in preparing detailed reports such as are required by English companies, and I therefore took it on myself to write them.

"In these monthly reports I gave the statements as to the value and width of ore in the various workings verbatim, without any modification, as they were given to me in consultation with the staff—that is, the manager, the mine foreman and the surveyor. The widths as thus reported could be verified by sight in the course of my trips underground; they were thus verified, but the values could not be confirmed without systematic sampling, because the appearance of the ore does not disclose the amount of its gold contents, ore worth $10 per ton having little to distinguish it from material containing several ounces of gold per ton. A systematic sampling, the only method of checking the data furnished by the staff, was no part of my duty as consulting engineer, nor could it have been done without making evident a disbelief in the statements of the manager and those under him. I had no such disbelief, nor any suspicion whatever that the condition of the mine was being exaggerated. My original examination had proved the general trustworthiness of the management; they bore locally an excellent reputation; they had been appointed by my board of directors; and the mine itself was making an output, the average value of which agreed with the average value of the ore in the stopes and drives as reported to me. The writing of the monthly reports over my own signature must prove to you the full measure of my belief in the capacity of the management to know the value of the ore they were mining, and my belief in their ability to state it truthfully. That they did know the actual condition of every working face, in level or stope, was proved by the regular maintenance of a very large output; it was also indicated by the fact that the foreman took daily samples, of which assays were made, and by the further fact that the ore, when it reached the bins at surface, was sampled again previous to its shipment to the smelter or mill. The actual returns from the sale of the ore were the only data available to me—the assays at the mine were not recorded; but in view of the fact that no record had been kept in the five years previous to the transfer of the mine to the company, it was not a thing to arouse suspicion, and it was not a thing I could insist upon, because the staff was in no way subject to my orders. Those who are unversed in mining will wonder how an experienced man could be so deceived. The fact that the mine during the last 18 months has always been open to visiting mining engineers and shareholders, the fact that it has been visited by several men of great experience in mining, should be suggestive. The physical condition of the mine appeared most excellent; there was nothing to indicate that it was being worked in any way but a fair and proper manner. The sampling, which was in progress when I was last at the mine, indicates the manner in which the supposititious very large increase in the ore reserves obtained a convincing appearance of reality. The rapid increase was based upon the supposed demonstration of the fact that in my original sampling of the mine, made at the time of my first report, I had not given credit for the full width of the ore, later work, chiefly in stoping, having proved—so it was constantly represented to me by the staff—that the pay ore was two or three times wider than it appeared in the drives at the time I sampled them for my original examination.

"Thus the estimated tonnage of various blocks became doubled and trebled. The stopes started during the past year, and described in the monthly reports as having widths, in several cases reaching over 40 ft., have been found by the recent careful sampling to have been extended

far beyond the limits of the pay ore. The new discoveries made in the ground, included within my original estimate, but in parts of it which were not proved at that time as productive, have, on sampling, dwindled to very small dimensions. These conditions, together with the fact, already referred to, that it is not practicable to distinguish the relative richness or poverty of the ore by its appearance, without assay, will explain how it was possible to be misled. In regard to the neglect of exploratory work, I have simply to say that, as consulting engineer, I tendered many suggestions for development to the manager, but these suggestions, like many others, were set aside, it being within my province merely to tender advice, but not to enforce it. Insistence on new explorations was not considered vital, because of the supposed growth of the ore reserves in the existing workings. The management underwent a partial change in June. When Stratton's remaining interest was taken up, the local board of directors ceased to exist, and the manager was asked to resign, because I insisted on having executive control of the mine. The foreman was unfortunately appointed in the late manager's place by the directors; so that the new manager, Mr. Shipman, appointed by me, did not get control of the underground work until the dismissal of the foreman, which occurred in August, when extensive ore stealing was found to be going on in the mine. Shipman found it necessary to dismiss several of the members of the old staff. as they were themselves either under suspicion of actual stealing or of an improper discharge of their duties in not having reported what was going on. The completion of a changing-house, erected on my initiative, enabled the stealing to be checked; but it led to a strike among the miners, which lasted for a few days. These events so occupied Mr. Shipman's energies that not until the end of September was he able to take in hand the underground work, and commence the sampling of the workings as a part of a proper system which, under my directions, he was about to inaugurate. This led quickly to the discovery of the real condition of the mine. He consulted my assistant in Denver, and they together laid the matter frankly before Mr. Hammond, who at that time—in the first days of October—was about to commence an examination of the mine. On Mr. Hammond's advice, they proceeded with the sampling, pending my arrival in Denver, which occurred on October 19th. On that day I learnt, for the first time, of the facts, and I at once informed Mr. Baker, one of my directors, who happened also to be there on a visit to another mine. The next day, the 20th, I cabled to the secretary of the company in London, announcing the discovery, and on the day following I proceeded from Denver to the mine. On October 30th I left Colorado to come here, in order to place all the circumstances before the directors. I also had the hope that I might be able to attend the shareholders' meeting, and tender the explanation which you have now heard. Whatever blame is mine I take. I do not try to lessen it; but I can say in all honesty that I have never made a statement in the truth of which I did not believe, and for the correctness of which there was not good evidence."

We have received from Mr. Rickard the following notes prepared by him as to the present condition of the mine:

"As to the present condition of the mine in relation to its future prospects, I expect to prepare my final report on my return to Colorado. At the present time I may be permitted to clear up one or two misconceptions which may have arisen as a consequence of the conflicting statements made in the press.

"The ores produced by the mine are obtained from several veins, of which the Independence, Emerson and Bobtail lodes are the principal. Explorations on this system of lodes have been confined almost entirely to an area of about 30 acres in the northwestern part of the property. The first ore was discovered at the southern end of this particular area at a spot close to the present No. 1 shaft, and it was natural that the early development should trend northward from this point, because, in the first place, the nearest other contemporaneous discovery of rich ore was to the north, in the Portland ground, and, secondly, there was an idea prevalent at that time that the occurrence of ore was favorably affected by the 'contact.' This contact is the boundary between the granite and the breccia which lies upon it. The plane of contact slopes steeply northward, at No. 1 shaft, and the first ore found by Stratton also had a pitch northward, so that the coincidence derived an undue significance. For these reasons the 1,000 ft. of ground between No. 1 shaft and the northern boundary became the scene of the most active development.

"From No. 1 shaft to the southern boundary of the property there is an interval of 2,500 ft. The strike of the veins, known through their development in the northern area, takes them right through this portion also of the property. Throughout this southern area they have, however, been but slightly prospected. This ground was acquired by Stratton many years ago and was thereby placed beyond the touch of others than Stratton himself, who also neglected it pending the very successful developments which he was carrying out at the northern end. Good ore extends into the granite for a distance of over 200 ft. south of cause it is out of repair, is said, on good authority, to contain pay ore. known to exist on the property at the present time, although the old Washington Shaft, about 300 ft. further south, and now inaccessible because it is out of repair, is said, on good authority, to contain pay ore The Washington Shaft is on the Independence Vein, which crosses from the Independence Claim into the Washington Claim at a short distance south of No. 1 shaft. The further persistence, southward, of the vein is inferred from the continued occurrence of the phonolite dike with which it is closely associated in the northern ground. The Bobtail and Emerson veins cannot be traced on the surface, but this is not in itself discouraging, because even in the northern ground, where these veins have been found to carry good ore bodies, they do not outcrop at the surface. In fact, as regards the evidence at surface in the southern part of the property the mere absence of outcrops is not remarkable, because in the Cripple Creek District very few of the lodes have any outcrop, the Independence cropping, which led to Stratton's discovery, being a very notable exception.

"As to the influence of geological conditions in this southern area there is not much that can be said with certainty. The granite prevails throughout this part of the property. Granite was deemed, for a few years, an unfavorable environment for the lodes of the Cripple Creek District, the richer mines being at that time either in breccia or one of the eruptive rocks. It can be said, however, that the granite is certainly more favorable to the occurrence of ore in this particular district than is the schist, and it can be added that a large amount of the richest ore of the region has, during the past three years, come from lodes encased within the granite. Two of the best mines of the district are entirely within the granite. I refer to the Strong and to the Gold Coin, the first a contiguous and the other a near neighbor to Stratton's Independence. As far as it is possible to summarize the available evidence I would say that the ore-bearing veins are associated with dikes, chiefly phonolite, which extend from the central mass of andesite breccia into the surrounding granite, and the latter is likely to be the scene of successful mining where such dikes reach out into it. We have these conditions in our southern ground which would have undergone exploration during the past year and a half if I had had the executive authority to compel the carrying out of the advice which I tendered in an advisory capacity.

"Next comes the question of depth. When, in the early days of the district, it was surmised that the lodes would in depth eventually pass into the underlying granite it was generally feared that the change in the geological formation would be accompanied by the impoverishment, if not the actual cessation, of the ore bodies. The Portland and Independence mines soon penetrated into granite and proved that the lodes persisted into the lower geological horizon, both mines finding large bodies of rich ore in the granite. At the present time the eleventh level of the Portland is making an excellent showing, while in the Independence the ninth makes a poor showing, a fact to be explained in large part by the small amount of prospecting as yet done at that, the lowest, level of the mine. The eighth and the seventh look healthy and are yielding good ore, the sixth is not as good; similarly the fourth level makes a better showing than the second, so that there is evidence of a variation at successive horizons which appears to be in no way connected with depth or with the character of the prevailing rock. The ore bodies are closely associated with lenses of phonolite, themselves enlargements of small dikes of the rock, so that wherever these occur ore is likely to be found. Depth has no direct bearing on these conditions and they seem to be found alike amid the granite and the breccia. In other words, the occurrence of the ore bodies appears to be determined by particular local factors rather than by any general geological conditions.

"Therefore, there is a reasonable expectation of finding more ore in the southern area and there is a good prospect of opening up new ground in depth. The mine has yielded $8,500,000 up to the present. The vicinity of ground which has yielded such a quantity of gold affords, apart from the reserves known to be remaining, a great probability of the discovery of other ore masses. Such are the facts as we know them. Development work alone can determine the life of the mine."

COAL IN RHODESIA.—The report of the experts sent out by the British South African Company to inquire into the reported find of coal in Rhodesia practically confirms the original statements made with regard to it. The coal-field is situated some 180 miles northwest of Bulawayo, and is known to extend over at least 400 square miles. The seams vary from 5 ft. to 16 ft. in width, and as the coal lies within 40 ft. of the surface it will be worked by means of inclines instead of shafts. The experts declare that the coal is better than that now in use in the Transvaal, Natal and Cape Colony.

MICA IN GERMAN EAST AFRICA.—Some new geological explorations in German East Africa, in the Uluguru Mountains, situate to the west of Dar-es-Salaam, have resulted, says the "Handels Museum," in the discovery of mica. The mica sheets which have been found are very useful for electrical purposes on account of their solidity. Their even surfaced splitting capacity, as well as the capability of enduring high electric tensions, render the East African mica equal to the mica used in electro-technic from the United States, Canada, India, etc. In spite of the difficulties of transport, which have to be encountered in connection with the exploitation of the East African mica, until the projected Central Railroad approaches the Uluguru Mountains, the mining for the same might now already prove remunerative, as there is a strong demand for this material, the price of which varies according to color, size, etc.

COINAGE OF SILVER IN MEXICO.—The following official circular has been issued by the Finance Minister, affecting the introduction into the mints of bars for coinage:

"With the object of increasing the facilities which the regulations of March 27th, 1897, afford to the producers of silver bullion for the introduction into the mints of bars for coinage, the President of the Republic has been pleased to direct that, until further orders, the director-general of the mints shall give instructions for the admission into those establishments and into the Federal assay offices of bars .851, in lieu of the standard of .900 in fineness established as a minimum by article 9 of said regulations; provided that, in the opinion of the director and in consideration of the object sought, the nature of the bars in question does not hamper the work of the mints.

"In order to increase the coinage of the national money, and to relieve as far as possible the uneasiness caused by the scarcity of currency, which is reported in abundance due to the premium commanded by our dollars in foreign markets, the President of the Republic, desiring to stimulate the introduction of mixed bars into the mints, has been pleased to direct that from December 1st next until March 31st of the coming year of 1901, the tariff separation dues established by Section iV of article 1 of the decree of March 27th, 1897, shall be reduced to the following rates: When the proportion of gold does not exceed 0.200, $0.75 per kg.; when the proportion of gold exceeds 0.200 and does not exceed 0.400, $1.20 per kg.; when the proportion of gold exceeds 0.400 but not 0.600, $1.60 per kg.; when the proportion of gold exceeds 0.600, $2.00 per kg. In no case shall less than 50 cents be collected."

THE PITTSBURG-ST. LAWRENCE ROUTE FOR STEEL EXPORTS.

Written for the Engineering and Mining Journal by Waldon Fawcett.

An interesting development of this year is found in the experiment now being carried on by the Carnegie Company of Pittsburg of sending consignments of its product abroad, practically without transshipment. The development of the export business in iron and steel during the past few years has, of course, emphasized the need of cheaper transportation, and the rumored project for a new railroad from Pittsburg to the Atlantic coast which was recently discussed was simply one proposal which grew out of the exigencies of the case. One avenue of transit for this business was by water direct from Lake Erie to Trans-Atlantic ports, but various obstacles have heretofore seemed to make this plan impracticable. With the opening in the spring of 1900, however, of the enlarged St. Lawrence canals, thus making it possible for vessels up to 275 ft. in length and capable of carrying 3,000 tons of cargo each, to pass from the lakes to the Atlantic, the advantages of the scheme naturally presented themselves, and the upshot of the matter was that the Carnegie Company made preparations to demonstrate by actual experience the advantages and disadvantages of the plan.

The Carnegie Company two or three years ago undertook to build up at Conneaut, Ohio, what will one day be the greatest ore unloading port in the world. To make the communication complete the port of Conneaut, which is located on the south shore of Lake Erie, about midway between Cleveland and Buffalo, was connected with Pittsburg by a rail line—the Pittsburg, Bessemer & Lake Erie Railroad—which is essentially a freight-carrying road equipped with the heaviest class of rolling stock. When the plan for direct water shipment to European ports became feasible the Carnegie Company had in the railroad connecting its Pittsburg plants and the loading dock at Conneaut and in the installation of loading machinery at the latter port an equipment which enabled it to meet the new conditions under especially advantageous circumstances.

For carrying Pittsburg steel from Lake Erie to foreign ports the Carnegie officials some months since chartered from the Algoma Central Steamship Company, four steel vessels, the "Monkshaven," the "Paliki," the "Theano" and the "Leafield." These vessels are all foreign-built craft and came to the lakes last season to engage in the iron ore carrying trade for a company which is developing new Canadian iron properties. As the lakes are closed to navigation during three or four months of the year the owners of the vessels saw in the Carnegie charter an opportunity to have their steamers continue to make money throughout the winter and still be on hand ready for lake service in the spring.

The "Monkshaven" sailed in November for Avonmouth, England, with a cargo of steel billets; the "Leafield" followed with 1,000 tons of sheet bars consigned to Swansea, Wales; then came the "Theano" with 1,000 tons of sheet bars for Newport, England; and finally the "Paliki" with 1,001 tons of sheet bars for Cardiff, Wales. These vessels are about 240 ft. in length by 32 ft. beam. All of them stopped in the vicinity of Montreal and doubled their cargoes by taking on shipments of pulp wood also bound for England. Each boat carries a crew of about 20 men. The vessels which have been sent abroad with these cargoes of steel will remain on the other side engaging in the coasting trade until spring and will then return to the great lakes.

One of the most interesting phases of this new steel transportation enterprise is found in the methods which have been followed in loading the vessels. The cargoes consisted, as has been explained, of steel billets and sheet bars, but they were placed abroad by means of the same ingenious apparatus which has been employed at Conneaut for a couple of years past in the handling of rails from cars to vessels. This device is in use nowhere else, and the Carnegie Company owns the patent rights. By this invention 14 steel rails can be handled with the speed formerly required for one and with less labor, indeed the only hand labor involved is that necessary to pile the rails together. The rails are held in a box or carrier, supported by chain attachments, and after being lifted the rails are tilted in any desired position so as to enter the hatch of the ship. The carrier, which naturally strikes first after the load enters the hold of the ship, is enabled by rollers or casters, with which it is provided, to travel easily over the floor or a bed of rails, as the case may be, and thus the rails are placed in any position in the hold desired. This tackle and apparatus are moved by hoisting machinery of the usual type, and as a rule it is possible to handle fully 800 tons of rails per day with one machine. The cost of handling is considerably less than a third of that formerly entailed. Vessels which formerly loaded 300 tons of rails per day have taken aboard 950 tons in eight hours by means of the new apparatus, and on one occasion 2,575 tons of rails were placed aboard a vessel in 33 working hours.

Three machines worked on the "Monkshaven," and she received her entire cargo of 1,001 tons in 20 hours. The sheet bars in order to be transferred by the same apparatus had only to be carefully piled, secured by chains and encased at the ends. The bars are 10 in. in width and come in 30-ft. lengths. In the case of the "Leafield" the record made by the "Monkshaven" was surpassed, the 1,000 tons being placed aboard in 16 hours by four gangs, each comprising 25 workmen.

For purposes of comparison it may be interesting to note in some detail the route which has been taken by these initial cargoes of steel for direct shipment abroad. The only rail haul on the route, that from the mills at Pittsburg to Conneaut, is 103 miles in length. From Conneaut the vessels proceeded a distance of 75 miles across Lake Erie to Port Colborne at the entrance to the Welland Canal; thence 27 miles through the canal, which is free, and 130 miles on Lake Ontario to Kingston, where the St. Lawrence River was entered. The distance to Montreal is 170 miles, and trip from Montreal to Quebec added 160 miles. From Quebec to Liverpool is 2,502 miles, making the total distance from Pittsburg to Liverpool 3,267 miles. By the old route, including the rail haul to New York, the distance is 3,425 miles. Shipped by the old route the freight tariff on a ton of steel billets from Pittsburg to Liverpool is $7.50, but this will undoubtedly be cut as a result of the low rates which may be secured on the new route.

To some readers it may appear strange that these vessels under charter to the Carnegie Company carried only about 1,000 tons of steel each, whereas vessels capable of carrying 3,000 tons of cargo may pass through the canals. This is due to the fact that these vessels were not built with especial reference to the requirements of lake service, but are typical ocean steamers of their size, and thus they cannot accommodate anything like the quantity of cargo which it would be possible to place in a vessel designed especially for this service. If this new route is found satisfactory it is only reasonable to expect that a growth will be manifested in the business of the lower lake ports, while there will be a corresponding falling off in the steel export business of the several coast ports. So sanguine are men in the iron and steel trade that there will ere long be a great demand for vessels especially designed to perform the service in which the four pioneer steamers are now engaged, that the steel shipbuilding plants on the lakes have been given all the contracts which they could possibly accept for new tonnage to conform to these conditions.

Several of these new vessels building by the American Ship Building Company for a syndicate of eastern capitalists will cost in the neighborhood of $200,000 each. They will have steel decks and be fitted with triple expansion engines and Scotch boilers. In conformity with the accepted practice on the lakes the engines in these new craft will be placed in the after part of the vessel, while the pilot houses will be located well forward. The three gangways which will be provided on either side will be something of an innovation for the coasting trade, inasmuch as ocean steamers have heretofore had their cargoes hoisted through hatches in the deck. Nevertheless the naval architects who designed these boats claim to have embodied in the plan the best features of both the lake and ocean cargo carriers and the marine insurance companies have fully sanctioned the plans. Men of experience in the iron and steel world have figured that vessels of this character can save the shippers, in freight rates, $1 per ton on billets and $2 per ton on finished steel and still return 10 per cent. on the investment.

LAKE RATES FOR THE SEASON.

The Cleveland (Ohio) "Marine Review" says that lake freights that have ruled from day to day during the past season are, of course, very much below the basis of $1.25 on which contracts for the movement of iron ore from the head of Lake Superior were made last winter, but it is interesting to note, nevertheless, that the averages of daily rates for 1900 are higher than they were in 1897 or 1898. The principal items are given in the following tables:

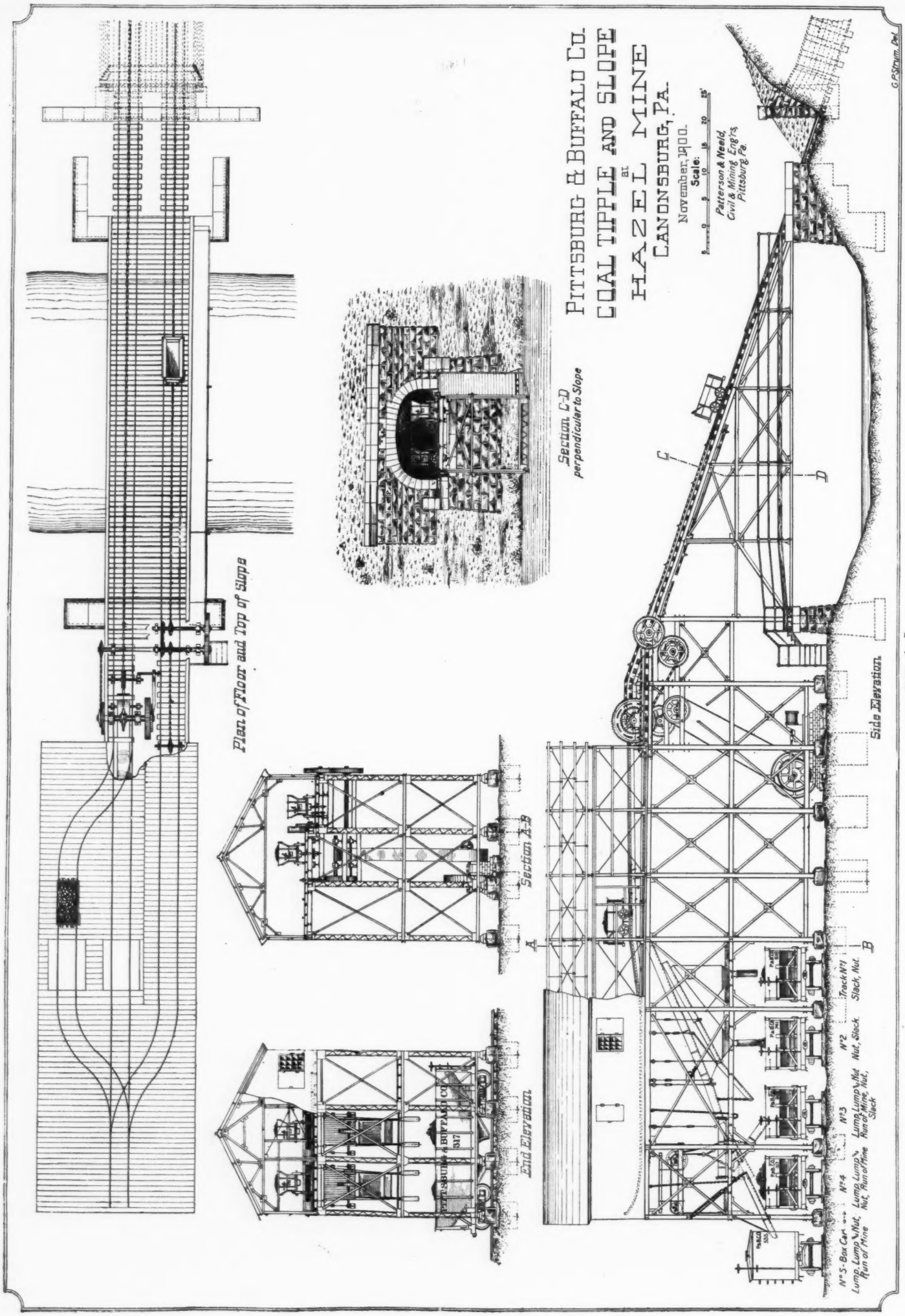
	1898. Cents.	1899. Cents.	1900. Cents.
Iron ore, Escanaba to Ohio ports, gross ton	50.8	94.8	69.5
Iron ore, head of Lake Superior to Ohio ports, gross ton	61.0	129.5	84.5
Iron ore, Marquette to Ohio ports, gross ton	59.8	108.5	78.3
Soft coal, Ohio ports to Milwaukee, net ton	27.8	68.9	45.4
Soft coal, Ohio ports to Duluth, net ton	23.4	45.4	40.2
Soft coal, Ohio ports to Portage, net ton	29.7	56.4	41.3
Soft coal, Ohio ports to Manitowoc, net ton	28.5	67.0	43.6
Soft coal, Ohio ports to Sheboygan, net ton	27.8	66.5	43.6
Soft coal, Ohio ports to Green Bay, net ton	28.5	66.5	45.0
Soft coal, Ohio ports to Escanaba, net ton	26.4	58.2	40.0
Hard coal, Buffalo to Milwaukee, net ton	28.0	72.7	48.5
Hard coal, Buffalo to Chicago, net ton	28.0	72.7	48.5
Hard coal, Buffalo to Duluth, net ton	23.0	49.5	39.5

This year the averages of daily rates, especially as regards iron ore, are not of as much importance as in previous years, on account of the very large proportion of the different commodities that was moved on season contracts. Of the total movement of ore, probably 85 per cent. was on the contract basis of $1.25 from the head of Lake Superior. Soft coal going to the head of Lake Superior was also covered largely by 50-c. contracts, probably to the extent of 1,750,000 tons, and thus the year has been one of special profits to the vessel interests on account of season contracts. The prosperous state of affairs a year ago and the action of Rockefeller representatives in bringing about the high contract rates are matters understood by everybody interested in the lake trade.

Some averages for the 10 years, 1891-1900, are as follows: Iron ore, head of Lake Superior to Lake Erie ports, 90c.; Marquette to Ohio ports, 79c.; Escanaba to Ohio ports, 64½c. Bituminous coal, Ohio ports to Chicago or Milwaukee, 47c.; to Duluth, 37c. Anthracite coal, Buffalo to Chicago, 48c.; to Duluth, 31c. Iron ore rates are per long ton; coal per short ton.

FAN BLOWER PRACTICE.—In a paper read at the last meeting of the American Society of Mechanical Engineers Mr. William Sangster presents some interesting facts regarding fan blower practice in connection with cupola furnaces and forges. He points out that "in hardly any other class of machinery is the method of application of so great importance as it is in the case of centrifugal fans. The conditions of one installation are usually so different from those of any other that hard and fast rules are out of the question." Briefly summarized he shows that the horse-power required to produce blast for a cupola is equal to three-tenths of the tons melted per hour multiplied by the pressure of blast in ounces per square inch. For forge blast an allowance of 0.75 H. P. may be made per forge and for exhausting smoke therefrom the power required will be 0.44 H. P. per forge.

AN AUSTRALIAN DREDGING PROJECT.—The "Australian Mining Standard" says: "The silt raised by the Government dredges, which are deepening the channels at the mouth of the Shoalhaven, Moruya and other New South Wales rivers, is said to be gold-bearing. The Minister for Works, Mr. E. W. O'Sullivan, thinks therefore that advantage should be taken of this fact to recoup the Government for some of its outlay. He has been greatly struck by the ingenuity of gold-saving appliances shown at the Technical College, and has been consulting with the officers of his department as to whether it is not possible to use them in connection with the dredges. The problem of effectively washing the immense mass of silt that is continually being lifted by harbor dredges would be very formidable, and we fear that either the efficiency of the dredge would seriously suffer in the attempt, or else that the gold-saving appliances would yield a very unremunerative return."


Pittsburg & Buffalo Co.
Coal Tipple and Slope
at
Hazel Mine
Canonsburg, Pa.
November, 1900.
Scale:
Patterson & Neeld,
Civil & Mining Eng'rs,
Pittsburg, Pa.
G.P.Strum, Del.
Plan of Floor and Top of Slope
Section C-D
perpendicular to Slope
Section A-B
End Elevation.
Side Elevation.
A
B
C
D
PITTSBURG & BUFFALO CO
317
N°5- Box Car
Lump, Lump Nut, Run of Mine
N°4
Lump, Lump Nut, Run of Mine
N°3
Lump, Lump Nut, Run of Mine Nut, Slack
N°2
Nut, Slack.
Track N°1
Slack, Nut.

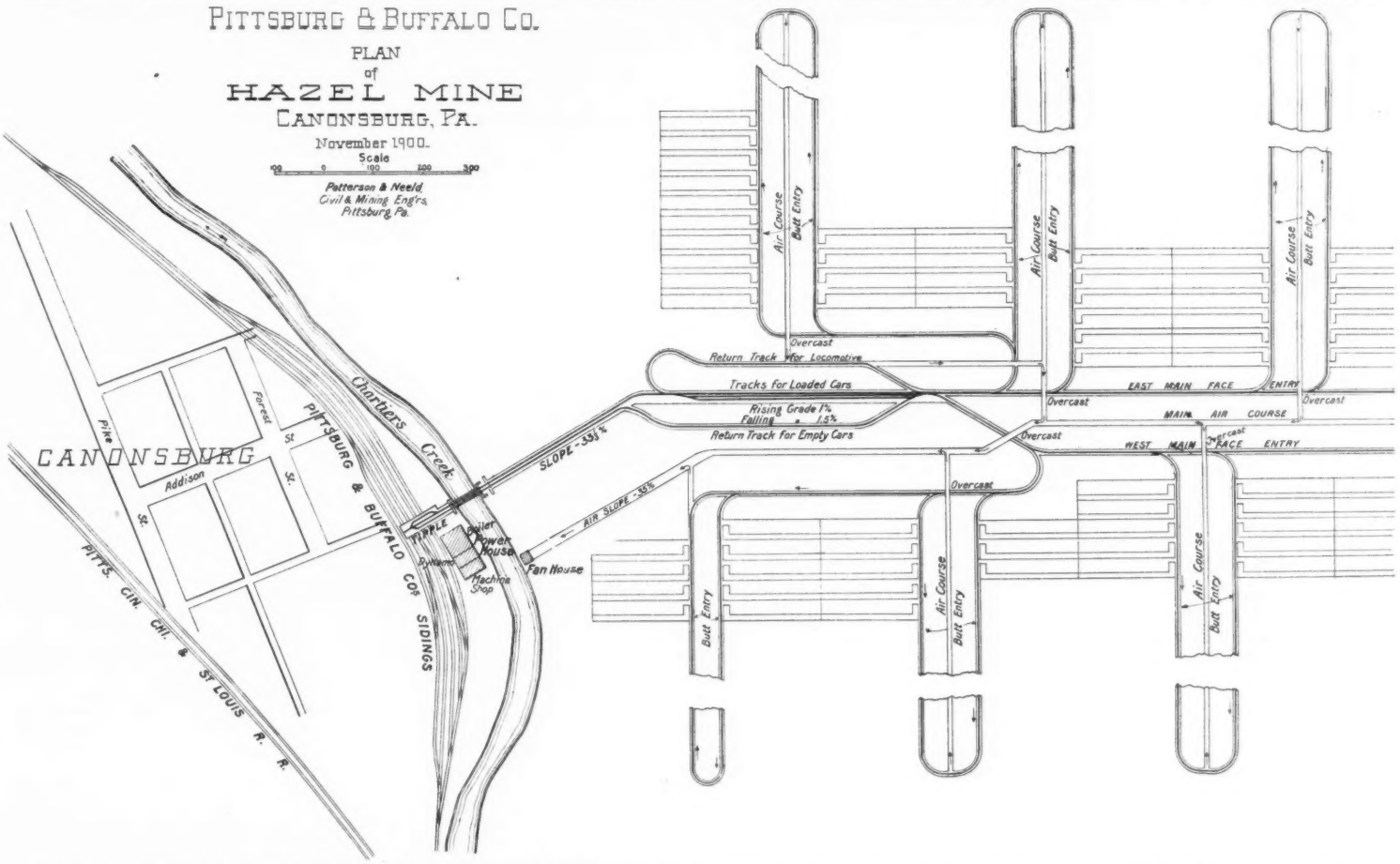
FIGS. 1—5.

THE PITTSBURG & BUFFALO COAL COMPANY'S MINES.

By Our Special Correspondent.

The great advances made in coal mining in recent years by the substitution of machine for hand mining, the use of mechanical haulage, and the adoption of improved machinery for handling the coal on the surface, are well illustrated in the following description. The mine in question is provided with machinery of the latest and best types, and its equipment has been planned with a view to handling a large output rapidly and economically.

The Hazel Mine of the Pittsburgh & Buffalo Coal Company is located at Canonsburg, Washington County, Pa., on the line of the Chartiers Branch of the Pittsburg, Cincinnati, Chicago & St. Louis Railroad, 22 miles south of the city of Pittsburg. The coal here is known as the Pan Handle vein of the Pittsburg coal, is 6 ft. thick and lies 80 ft. below the level of Chartiers Creek. The company owns 1,200 acres and is opening up the field on elaborate plans, with the most modern and best machinery in the market, for the mining, handling and shipping an output of 3,000 tons per day. Manual labor of all kinds is dispensed with wherever machinery can be made to do the work. The Jeffries chain machines are used for mining. Six of these machines are now at work and more will be added as additional entries are opened up. One 15-ton electric locomotive is now used for underground hauling, and as soon as the necessities of the mine require, others will be placed in



operation. All the tracks, both in the main entries and the butt entries, are built in the most substantial manner, with oak cross ties 5 ft. by 6 in. in cross section, and 40-lb. steel rails laid to a gauge of 3 ft. 6 in. All frogs and switches are similar in construction to the ordinary railroad forms.

The general arrangement of the entire plant, with railroad sidetracks, power house, tipple, and inside workings is shown by Fig. 1, and the general construction of the tipple is shown by Figs. 2 to 5. In deciding on the general features of the plans for operating the mine, the question of the manner of hauling from the mine to the surface was the first one to be decided. The coal must be elevated a vertical distance of 135 ft. to secure the proper height for screening and loading into railroad cars and the relative merits and economy in operation of a shaft as compared with those of a slope were carefully investigated, and considered. The result was that a slope with a grade of 33 1/3 per cent. was adopted as being safer, of greater capacity, and more economical than a shaft. A contract was awarded Messrs. Bollinger Brothers, of Pittsburg, Pa., for the construction and erection of a haulage plant with the following specifications as to capacity: "The machinery shall have a capacity to receive at the foot of the slope 3 loaded coal cars per minute weighing 7,000 lbs. each, to discharge them at the head of the slope, and to receive the empty cars at the head of the slope and to discharge them at the foot of the slope. All of this work to be done automatically and under average running conditions." Under these conditions the machinery will handle 4,500 tons of coal in 10 hours; as the proposed capacity of the mine is 3,000 tons daily there is a 50 per cent. surplus in the capacity of the machinery, which will allow for any interruptions in the regular discharge of cars.

To care for the cars at the top of the slope, to weigh, handle, dump, screen and load the coal, a steel tipple 112 ft. long and 30 ft. wide has been erected, with an approach by bridge across Chartiers Creek. Two Phillips automatic car dumps are placed side by side in the tipple.

The lump coal, after passing over the 1¼-in. screen A, Fig. 2, where nut coal and slack is taken out, is received in the basket where it is weighed and then dumped into the railroad car. This basket is suspended by wire ropes from two drums overhead and balanced by counterweights, and can be lowered to dump into the bottom of a car with sides only 30 in. high without breaking the coal, or only enough to top off the loading of one of the large steel cars with sides 8 ft. high. By the slackening or tightening of the regulating chains the basket can be made to dump either into a car on track 3 or on track 4. On tipples where there is only one track for loading coal, there is a loss of time while the loaded car is being dropped down and an empty one put in place. With the basket made to dump from either end, as used at the Hazel Mine, no time is lost, as there is always a car in place on either one track or the other ready to receive the coal.

There has always been an objection to the ordinary form of tipple for loading what is known as three-quarter coal, that is, lump and nut coal together. The ordinary tipple first dumps the lump coal into the car, and afterward dumps the nut coal from a separate pan. The car is loaded then, not with a uniform grade of coal, but parts of the car contain only lumps and other parts contain only nut coal. To overcome this difficulty, an additional ¾-in. screen has been placed in the pan below the 1¼-in. screens. Cover plates are lowered over the the 1¼-in. screen and the coal passing over the ¾-in. screen retains the nut coal, losing only the slack. By this manner of screening the lumps and nut coal are uniformly and evenly mixed, making a much more acceptable product for the consumer, than that received from the ordinary arrangement.

Track 5 is for loading box cars; a pan is lowered into position, as shown in the figure, and the coal is dumped into it from the basket. A mechanical box-car loader is used for carrying the coal to the extreme ends of the cars, doing away with manual labor shoveling it into place.

When run-of-mine coal is to be loaded, steel plates are lowered onto the screens and the coal is carried directly to the basket and from there loaded into the cars on any one of the tracks, 3, 4 or 5.

When the screen is in operation and lump coal being loaded, the nut coal passes into a bin above track 2, and the slack into a bin above track 1. Adjustable spouts from these bins reach the proper height for loading the car underneath, and when loaded to this height the coal stops running until the car is pushed forward. The services of a man are needed only occasionally to attend to the loading of both the nut coal and the slack, and there is no danger that the car will fill and overflow to the ground below. Seventy-five empty cars can be placed on the five railroad tracks at one time, and by a system of cross-over switches cars can be taken from one track to the other. Ample standing room is provided below the tipple for the 75 cars as they are loaded.

The general construction of the tipple building with the approach on the slope leading thereto, crossing Chartiers Creek on a steel truss bridge, is shown by the drawing. The structure is supported by steel columns formed of two 10-in. channels laced together, heavily braced by angle diagonals, the horizontal struts being formed of either channels or I-beams. The floor stringers are I-beams varying from 9 in. to 15 in. deep, according to their position. The roof and sides of the building are cov-

ered with corrugated iron. The whole structure is so braced that if any one column should be accidentally knocked out, the remaining structure would not be affected. The columns stand on masonry pedestals to which they are anchored by heavy bolts. Both the bolts and pedestals are designed to resist the greatest uplift that can come on them, either by action of the vertical load or of a wind pressure of 20 lbs. per square foot. The pedestals under bents 5, 6 and 7 are especially heavy as they resist the uplift of the total load on the slope. There will be 17 loaded cars on the slope at one time and the same number of empty ones. The cars are carried up and down the slope by two separate steel link chains formed of flat steel bars. Each link of the chain for the loaded cars is composed of two bars, each 4¾ by 1 5/16 in., the links being connected by pins 2⅜ in. in diameter; length of link, center to center of pins, is 12 in. The chain for empties is similar in construction to that of the one for loaded cars, the bars being 3 by ⅝ in., with pins 1½ in. in diameter, and length of link, center to center of pins, 6 in. Both chains are driven by a 200 H.-P. engine placed under the head of the slope. The power is transferred from the engine through a system of heavy steel gear wheels to sprocket wheels at the head of each track of the slope, which drive the chain at a speed of 72 ft. per minute. Cast steel hooks take the place of one of the links every 24 ft. on the loaded side and every 10 ft. on the empty side. These hooks project above the track and engage a heavy clip fixed to the bottom of each car. The chain is supported every 8 ft. by cast-iron wheels running on an angle-iron track, fixed to the cross ties on the upper side and suspended from the floor beams on the bridge. Underground a conduit underneath the tracks provides for the return chain. At the bottom of the slope the chain passes around a tail sprocket wheel. The operation of taking the loaded cars from the bottom of the slope to the top, dumping them and returning the empty cars to the bottom is automatic, but is done without the use of any complicated or delicate machinery, that would be liable to be disarranged.

At the bottom of the slope three tracks are provided for holding the loaded cars as they are brought from the various entries; these tracks are placed on a grade sufficient to carry a car along to the chain, when it is released from the cars behind. After reaching the bottom of the chain, it remains there until a hook engages the clip on the bottom when it is carried to the top. As the chain passes down around the head sprocket wheel the car is released from the hook; this occurs after the car has passed the knuckle and is on a down-grade toward the dump, to which it runs by gravity. Here the dump man pulls a lever of the automatic dump and the coal is dumped into the screen pans below the floor of the tipple. The empty car stands on the dump until the next loaded car coming down the grade bumps against it, starting it down the short slope at the dump, acquiring a speed of about 8 miles per hour; from here it runs along a track on a rising grade until stopped by the force of gravity. The car then starts back and is turned to the empty return track by an automatic spring switch. It is stopped by an automatic brake a short distance back of the top of the slope. From this point an auxiliary chain engages the empty car and carries it to the main chain, just as a hook on the main chain is in place to receive it. The car follows the hook down the slope, until it passes around the tail sprocket wheel. The car is released here and is turned from the line of the slope to the track provided for standing the empty cars. This track is on a falling grade of 1.5 per cent., and is long enough to hold 70 empty cars. The electric locomotive takes the cars from this track and distributes them through the mine as they may be needed.

The three-entry system is used in the mine, the general plan of which is shown in the second drawing. The empty cars are taken into one of the butt entries and distributed to the various rooms, the locomotive then passing around to the other butt entry and taking out the loaded cars from the rooms leading from it. The locomotive works in the butt entries collecting loaded cars until there are enough for a trip to the receiving tracks at the foot of the slope. There are three of these tracks with a capacity of 150 cars. They are placed on a falling grade of 1 per cent. so that when a car is uncoupled from the others it runs by gravity to the foot of the slope, where it is engaged by the haulage chain and carried to the tipple. The locomotive passes around the receiving tracks by a track in a separate entry and is ready to take a trip of empty cars for distribution in the mine.

The direction of the air currents is shown by the arrows in the mine plan. At the mouth of the air slope is an exhaust fan capable of furnishing 200,000 cu. ft. of air per minute to the mine, being in excess of any possible future requirements. The fresh air enters the mine through the haulage slope. The main current of air is split at each of the entries, and by means of regulators placed in the air course between the butt entries, the quantity of air admitted to the pair of butts is regulated according to the needs. After it has passed through those parts of the mine requiring fresh air it is returned to the main air course through the air entry driven between each pair of butt entries, and thence through the main air course to daylight through the fan. There is not a trap door nor any obstruction to the free passage of the locomotive throughout the whole mine. The return air from the butt entries is carried across the haulage ways by overcasts. There is but one overcast in the main air course, where it crosses the West Main Face Entry.

It is true that this system of opening a mine is not cheap, as the additional entries to be driven and the numerous expensive overcasts to be built require a large outlay of capital, but the additional safety to the miners and the greater economy in the operations fully justify the first cost.

The power for the entire plant is furnished from a central power house, located a short distance from the tipple. Four batteries of boilers of 800 H. P. capacity furnish steam to drive the haulage machinery, operate the machine shop, and drive the electric generator and fan. Two Westinghouse generators, each of 150 K. W. capacity, are used, driven by two 290 H. P. Russell automatic engines. These generators furnish electricity for the operation of the mining machines, the electric pump, for lighting the mine and for lighting the tipple, buildings and yard, so that operations can be carried on both day and night. As before stated, the capacity of the mine will be 3,000 tons daily for a day of 10 hours; the machinery, however, is all adapted for night work as well as day, so that the actual capacity of the mine is double this amount, or 6,000 tons per day.

Messrs Patterson & Neeld, civil and mining engineers of Pittsburg, furnished the plans and superintended the work of opening the mines and erection of buildings and machinery in conformity with the general ideas and directions of Mr. John H. Jones, treasurer of the Pittsburg & Buffalo Company, whose whole lifetime has been taken up with the study of coal production, including every detail of the mining, shipping and selling the product. Mr. Jones, until a few months ago was a director and chairman of committee on mines of the Monongahela River coal combination. Messrs. Bollinger Brothers of Pittsburg, Pa., were the contractors for the haulage machinery. The Fort Pitt Bridge Works of Canonsburg furnished the structural steel tipple and bridgework and the Phillips Mine Supply Company of Pittsburg the operating machinery for screening and loading the coal. Mr. David G. Jones, president of the Pittsburg & Buffalo Company has been on the ground day and night since the work was started, and it is mainly due to his untiring zeal and energy that the work has progressed so rapidly. Indeed, a record has been made at Hazel Mine, in the time occupied from the breaking of ground until the shipment of coal commenced. Four months after ground was broken the company was shipping 450 tons of coal per day, and it expects by January 1st to produce 1,000 tons daily; and to increase this output until a maximum of 6,000 tons in 24 hours is mined and shipped.

ABSTRACTS OF OFFICIAL REPORTS.

Old Colony Copper Company, Michigan.

This company's report for the year ending September 30th, 1900, shows that exploration work was continued through the year. Cash on hand October 1st, 1899, was $178,889; receipts for interest, etc., $7,808; total, $186,697. The payments for mining and exploration, including supplies were $55,770; general expenses, taxes, etc., $27,612; total, $83,382, leaving a balance of $103,315 forward to the current year.

Superintendent Chynoweth reports the sinking of 610 ft. during the year; tunneling, 1,203 ft.; drifting, 452 ft., and cross-cutting 292 ft.; total openings amounting to 2,557 ft. On the amygdaloid lode, which shows a width of 18 ft., they have driven 174 ft. From this lode they have taken considerable heavy copper and the vein has been altogether so satisfactory that it was decided to sink a winze to determine its value at a greater depth. The winze is now down 50 ft. and is carrying a seam of heavy copper 2 ft. in width. This vein is to be explored further.

President Fay says: "It is our purpose to limit our operations for the winter to sinking a winze in the tunnel on the amygdaloid lying just west of the conglomerate, and to driving the tunnel, which was started a little over a year ago and which is planned to cross-cut all the belts from the Eastern Sandstone to the western limits of the property. The tunnel cut no well-defined lode until it reached the big conglomerate about 1,000 ft. from its mouth. The foot and hanging walls of this bed are very clearly shown, as well as those of every belt lying upon or west of it, and as the disturbed or disordered condition of the formations east of the conglomerate in the tunnel correspond very closely with those in our Mayflower investigations, we are inclined to believe that we shall find our most valuable deposits west of this great conglomerate bed."

El Oro Mining and Railway Company, Mexico.

This company's report covers the period from the formation of the present company to June 30th. The receipts reported from the London office were: Bullion recovered, £106,709; railroad and lumber sales, £12,030; total, £118,739. The charges were: Mining, £47,138; railroad expenses, £5,503; general expenses, London office, etc., £6,214; depreciation, £2,000; Somera sinking fund, £3,667; total, £64,522; leaving a net balance of £54,217 on June 30th.

The manager's report states that in the 100 stamp mill for the nine months from January 1st to September 30th, there were 53,506 tons of ore crushed and then worked by the cyanide process. The recovery from plates in the mill was $167,125, or $3.12 per ton, being about 22.5 per cent. of the total. The recovery in the cyanide plant was $576,415, or $10.87 per ton, being about 77.5 per cent. of the total. The total recovery was $13.89. The cost of mining and development work was $3.82; milling, $1.06; cyaniding, $1.27; total, $6.05 per ton. The figures given above are in American gold.

The old 25 stamps and Chilean mill were kept running until the first of the year. Final clean-up of the mill was made in January. The tailings from the pans which had been stored, and are treated in the old cyanide plant, produced during the nine months $77,747 from 11,004 tons or a value of $7.07 per ton. This cyanide plant will probably remain in operation for six or eight months, or until such time as production ceases to warrant its continuance.

The directors' report covers the period from the formation of the company to June 30th, 1900, and shows a realized profit of £54,217, after writing off £3,667 on the Somera No. 1 option, and £2,000 for depreciation of plant. Regular crushing in the new 100-stamp mill commenced January 1st; but, as anticipated, the introduction of new methods of treatment caused the milling operations for the period under review to be largely experimental, and while the new cyanide process is now an assured success, the mill has not yet reached its full productive capacity

On March 6th last the board acquired a working option for a period of 2½ years upon a property comprising about 268 acres, called Somera No. 1. It adjoins the western boundary of a large portion of this company's property, and covers the dip of the San Rafael and Branch veins, that is to say, it forms the deep level of this company's mines. The directors were impressed with the potential value of the Somera No. 1 from the first, as at the northern end of the El Oro ground they would have been restricted by the rights of the Somera No. 1 from following the San Rafael Vein on its dip to a greater vertical depth than 300 ft. below the present lowest level, inasmuch as at a depth of 586 ft., the

San Rafael Vein would have passed on its dip beyond the El Oro sideline into the Somera No. 1 Claim, and all this company's rights thereto would have ceased. For the same reason the directors have since June 30th acquired for the sum of £5,000, from the British Gold Mines of Mexico, Limited, a portion of the Carmen Claim, adjoining the southern end of the Somera No. 1 and the western boundary of the El Oro, and protecting the dip of the San Rafael Vein in the southern end of the El Oro ground. The price paid for the option on Somera No. 1 was £30,527, and, with the cost of development to June 30th, £3,641, makes up the sum of £34,168. The directors do not consider that this amount should forthwith be charged to revenue, and have therefore decided to carry all expenditure on Somera No. 1 to a suspense account, extending over five years, and to write off each year one-fifth of the estimated total expenditure incurred in securing the option, and to be incurred in the development of the property. In accordance with this resolution, they have written off in the accounts now presented the sum of £3,667, being the proper proportion for the four months from March 6th to June 30th.

An amount of £2,000 has been written off for depreciation of plant; this the directors consider sufficient in view of the fact that only part of the machinery has been running for six months, while a great part of it only came into operation at different periods between January and June. The amount of £54,217 was available for dividend, and a dividend of 1s. per share, free of income tax, was distributed August 15th. The capital, originally £900,000, was increased, at the statutory meeting held in 1899, to £1,000,000, by the creation of 100,000 new shares of £1 each. None of these new shares had been issued up to June 30th last; but since then 25,000 have been issued at par to the Exploration Company, Limited, under an option given on November 14th, 1899, and that company still holds an option over 55,000 shares.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

DUTY ON IMITATION PUMICE STONE.—A manufacture composed of ground or pulverized pumice stone and clay, in the form of bricks or cakes of different uniform sizes, shapes and grades or quality of texture or grain, known commercially as "composition pumice stone," is dutiable at rate of $6 per ton under paragraph 92 and section 7, act of July 24th, 1897, as an article similar to pumice stone, and is not dutiable as "articles or wares composed wholly or in chief value of earthy or mineral substances. . . . not specially provided for."—Appeal of R. J. Waddell & Co. from Collector of Customs at New York; United States Board of General Appraisers.

THE PRATT-WETHEY SCREEN.

The accompanying illustration shows the Pratt-Wethey screen, an improved device which is manufactured and introduced by the Gates Iron Works, of Chicago. It is meeting with much favor in large concentrating plants on account of the successful manner in which it handles wet ores. This screen consists of a stationary, vertical, conical screen, large in diameter at top, tapering to a point, with a small opening at the bottom for the discharge of rejections. The pulp is fed into a trough provided with three discharge pipes located at the mouth of the screen and secured to the vertical shaft; the material is thence distributed by centrifugal force on the perforated metal or wire cloth, as the case may be. Midway in the height of the machine a diaphragm is placed, which serves to catch the unscreened material and return it to the center, emptying it into a second discharge box, similar in construction to the first one mentioned, but smaller in diameter, which is also attached to the vertical shaft. The water and fine material are discharged through the meshes of the screen and thence through a discharge pipe in bottom of the machine, while the oversize particles are returned to the crushing machinery for further pulverization.

THE MINERAL PRODUCTION OF INDIA.

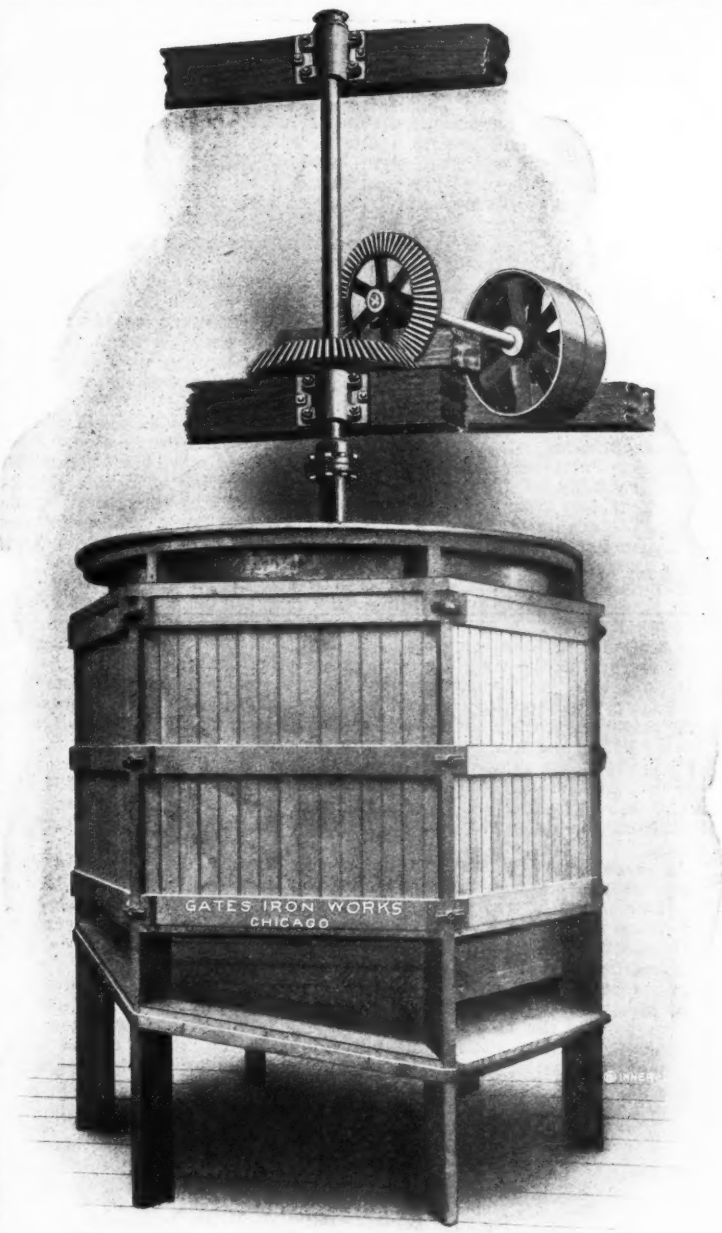
The production of the more important metals and minerals in India for the calendar year is given by the official returns as in the table below:

	1899.	1900.	Changes.	Per ct.
Gold, ounces	410,678	457,020	I. 46,342	11.3
Iron, tons	49,763	60,725	I. 10,962	21.9
Coal, tons	4,605,528	4,937,160	I. 331,632	7.2
Salt, tons	1,027,389	961,850	D. 65,539	6.4
Saltpeter, cwt	230,362	224,358	D. 6,004	2.6
Petroleum, gallons	18,973,978	32,934,007	I. 11,960,029	63.0

The quantity of salt produced in India shows considerable variations from year to year, the result of seasonal causes at the Sambhar Lake. In Northern India the principal sources of supply exist in salt lakes and wells in Rajputana and in the rock-salt of the Panjab salt range. In Bombay and Sind, Madras and Lower Burma, salt is manufactured from sea water along the coast; in Upper Burma there are also some brine wells from which salt is made. The cost of internal transport is still so high, and the conditions under which salt is carried to India from Liverpool and elsewhere so favorable that the Indian demand for salt cannot be met in some tracts from local sources at a moderate price, and in these places there is a considerable importation of salt, chiefly from Liverpool, Hamburg, Aden and the Egyptian ports of the Red Sea. These imports are brought to Bengal and Burma, which are the only two importing provinces. The quantity imported has been, on the average of the last five years, 410,000 tons, supplementing the million tons produced.

Saltpeter, which is largely produced for export, was in former years of much greater importance than now, the decline in its employment for gunpowder and the preservation of food having led to a restriction of production. The bulk is made in Bihar, and a considerable proportion is exported after refinement in Calcutta.

The coal industry is expanding so rapidly from year to year that a statement of the average production over a series of years would not convey a true idea of the conditions. The output has increased from 2,820,000 tons in 1894 to 4,937,000 tons in 1899. Coal is found of varying quality over a very extensive sea of the Indian region. At present the principal mines are located in the Raniganj District in Bengal, at Singareni in the Nizam's Territory, in the Lakhimpur District in Upper Assam, at Mohpani and Warcra in the Central Provinces, and at Umaria in the Central Indian Agency. Indian coal is now extensively, in some places exclusively, employed for the railways, coasting and river steamers, mills and factories; but, as in the case of salt, the conditions of transport are not yet sufficiently developed, though they are being greatly improved, to permit of the exclusive use of Indian coal for industrial purposes. The quantity of Indian coal used in India is, therefore, supplemented by an importation which has averaged 460,000 tons annually in the last five years. Imported coal is mostly landed in Bombay, the mills in that place requiring large quantities of fuel and being too remote from the Indian sources of supply to find the use of Indian coal economical, having regard to the easy conditions on which steamers carry



THE PRATT-WETHEY SCREEN.

coal to India as freight. Most of the imported coal is English, a small quantity being received also from Japan.

The production of iron is as yet quite in its infancy, the ore being worked for the most part only in the Raniganj District of Bengal, where it occurs in close proximity to the coal-fields. Of the output last year 52,000 tons were produced in Raniganj. Whether or not it will be possible hereafter to utilize the deposits of other parts of India—in the Central Provinces, Madras and elsewhere—is a question which cannot at present be answered.

Gold is produced mostly in the mines in the State of Mysore. Mines have also been opened in the Nizam's Territory, but only a small quantity has been extracted as yet. No account is taken in these tables of the gold produced in parts of Northern India from the washings of river sands; there are no means of stating the quantity statistically, but is well known that it is entirely insignificant. The production of gold in the Mysore mines increases from year to year. In 1899 it amounted to 447,397 oz., the production in Burma, Madras, and the Nizam's Territory bringing up the total to 457,020 oz. in all.

Petroleum production is confined to Burma and Assam, the wells of Burma supplying about 97 per cent. of the total. The production is insufficient to supply the requirements of India, the imports last year being about 79,000,000 gallons.

Other minerals of commercial value produced in 1899 were manganese ore, of which 87,126 tons were mined, nearly all being shipped to Grea Britain; and mica, of which the output was 621 tons.

The production of other minerals in 1899 included 3.5 tons alum; 51 tons copper ore; 2,143 tons corundum; 6,443 tons gypsum; 1,524 tons graphite; 476 tons soapsand; 723 tons soapstone; 49 tons tin ore. None of these minerals has any special commercial importance. The tin or is mined by Chinese in Lower Burma.

The production of gems and semi-precious stone included 20 cwt. of amber, from Upper Burma; 1,251 cwt. garnets, from Rajputana; 1,111 cwt. jade from Upper Burma; rubies valued at 1,363,972 rupees from Upper Burma; and 124 carats diamonds from Bundelkhand in Centra India.

WHEN TO BEGIN TREATMENT OF CYANIDE TAILINGS.

Written for the Engineering and Mining Journal by Henry M. Crowther.

A tailings dump that assumes the vast proportions necessary to contain 500,000 tons and having a known value of over $1 per ton, becomes a reserve of wealth in sight, well-nigh irresistible in its attraction for those who own it; yet as things are in cyanide milling, such a pile is all but worthless, except by some such method as is suggested in this article. Mercur, Utah, with 1,250,000 tons of $1.50 tailings, was the scene of the tests given in part herewith as an illustration of possibilities for metallurgists to consider.

Tailings from proper cyanide operations represent the ore pulp after a maximum extraction has been effected at a minimum cost per ton; thus it is that generally there remain in the tailings values ranging from cents to dollars per ton. If over a dollar the question arises if it will pay to treat them, with the assistance of months or years of exposure, taking advantage of the more complete chemical action so occurring, than was possible in the short duration of first treatment.

There is an automatic action constantly at work in a dump of cyanide tailings of great economic importance in the subsequent recovery of their more refractory values in precious metal and more attention might most profitably be given to this feature. In dealing with this subject tailings of less than $1.25 per ton gold value will be considered as too low grade generally, to justify a chemical retreatment, while material of higher grade is usually preserved with a view to subsequent recovery of a profitable percentage of its precious metal, when time and exposure has rendered it less refractory, by oxidization and other reaction.

It is for these $1 to $1.50 tailings that it is the purpose of this article to suggest a profitable method of retreatment where chemical conditions are favorable and the reactions in the dump are assisted by providing for that feature, at the time the tailings are placed there.

It is a safe rule to assume that it will cost as much to chemically re-treat tailings as was the first cost of such milling, less the crushing and preliminary treatment expense. Thus, if first cost of cyaniding an ore was $1.50 per ton, it is obviously impossible to re-treat the tailings at a profit by the same means, provided they contain no more than $1.50 per ton, because of the low saving usually effected in the second treatment; but let us consider other means and take up the study of the problem from the moment the tailings are discharged from the leaching tanks.

In working ore by the cyanide process, using most approved two-stage method—that is, leaching and metal precipitation taking place at separate stages of treatment and not simultaneously—the solutions are preserved for re-use except an amount equal to about 20 per cent. of weight of ore treated, which is unavoidable loss, partly, on account of evaporation, but mostly by being retained as associated moisture, combined with tailings at time of discharge. Thus the wash-water that may be applied is limited to the amount of this loss, since it in turn becomes part of the mill stock of solutions. This wash-water does not completely displace the chemical solutions in the charge of ore, so it happens that tailings rarely occur that do not retain in the associated moisture of the mass at least ¼ lb. of cyanide and somewhat more of active alkali—caustic soda or lime—per ton. Now the greatest extraction service from this unavoidably lost cyanide may generally be obtained with only the expense of a little attention given to the chemical changes which exposure and time on dump effect. Under the conditions of the leaching tank, these tailings would remain unchanged for an indefinite period, but with the exposure to sunlight and air which occurs on dump, the active cyanide is given new life and the dissolving of metal goes on as long as the mass remains alkaline with cyanide present to take advantage of every stage of decomposition and disintegration of particles, as it occurs. Just how this accidental extraction takes place is a matter for careful study; it may be advanced that it is not the aqueous cyanide solution that effects the dissolution but the liberated prussic acid from decomposition of cyanides, and the alkalies are of service mostly in assisting oxidization and preserving the cyanide until this change is well under way. However, it is a fact that the dissolving of metal goes on automatically and the associated caustic alkalies present are necessary for this effect to take place, upon exposure of the tailings to air and sunlight. These automatically dissolved values are soluble and simply require a water-wash to recover them in solution, and as we do not have to avoid the destruction of cyanide, the precipitation and recovery of precious metal becomes a simple matter. Thus the expense of chemicals in treatment may be mainly avoided and the tailings heretofore considered worthless may be made to provide profits above the cost of labor in rehandling.

While this suggested foresight in probable future treatment of tailings will appeal to metallurgists, as making possible the profitable treatment of seemingly worthless tailings, it is none the less valuable in the recovery of values from higher grade dumps, which are saved specially for re-treatment. With only the cost of a few cents per ton in preliminary preparation to obtain best service from long expose to benefit of air and sunlight in the dump, this action may well be considered automatic and worthy of attention.

This preliminary preparation should consist of making the chemical condition of the tailings, at time of placing on dump, such that the otherwise waste cyanide contained—previously spoken of—is preserved for the longest possible period. To this end it is recommended that the final wash-water contain caustic alkali in solution sufficient to leave from one to several pounds per ton of tailings in the associated moisture which adheres to them; the amount being in excess of the quantity required to neutralize the acids of decomposition, which tailings will generate in a reasonable length of time. The desired oxidization will be much hastened and made more nearly complete by the alkali.

Tailings invariably contain a few cents and upward per ton, in dissolved gold and silver, which the limited amount of wash-water that may be applied, fails to wash out; but this amount is readily recovered as part of the extraction in after treatment. There is a certain degree of circulation occurring in a tailings pile which is of considerable importance to note, especially in sampling a dump.

First, the drawing action of the sun, assisted by capillary attraction, brings the moisture to the surface and evaporates the liquid, leaving a white residue of hydroxides, etc., forming a thin scale or coating, which will assay, usually 10 times as much as the dump from which it is derived. This phenomena appears within a few hours on newly dumped tailings in warm sunlight.

Second, the natural tendency for the extra moisture to sink to bottom of pile.

Third, the precipitation of rain and snow water, which dissolve the concentrated, high value, deliquescence products and carry them downward.

Altogether the tendency for the dissolved values to sink is greater than their concentration on the dump surface. Hence the values increase as depth is gained as well as the amount of soluble metal in mass, showing a much higher percentage in the lowest strata. Following are given a few tests made by the writer lately on tailings from the immense dumps in Mercur, Utah, which had been exposed to the weather from 3 months to one year. As these tailings came from the mill the average content was about 0.4 lb. of cyanide, 0.6 lb. of caustic soda and 8c. per ton in dissolved gold, with a moisture content of 20 per cent., and an average assay value of about $1 in gold.

	Tailings Tests.—Assay Value, Au.		
Moisture, %	Before washing.	After washing.	Extraction, %
12.	$1.03	$0.53	48.5
12.5	1.15	0.57	50.4
13.	1.03	0.48	53.3
11.5	0.62	0.28	54.8
15.	1.44	0.64	55.5
15.2	1.03	0.45	56.3
Average 13.2	$1.05	$0.49	53.3

The extraction given above was accomplished by merely percolating half a ton of water through each ton of tailings, the consumption of water being 7 per cent. of the dry weight of material treated or the difference between moisture of tailings as it existed in dump or 13 per cent. and the 20 per cent. it retains when saturated. The average assay value given is $1.05 in gold per ton, which is too low to permit a chemical treatment at a profit, but when a simple water wash and a precipitation costing but a few cents per ton will accomplish a 53 per cent. extraction on $1.05 tailings, or a recovery of 56c. per ton, it is possible to net 25c. per ton, working by improved methods and on a scale of 500 tons or more per day, the existing notch of low grade possibilities is lowered several points.

The daily capacity of each tank by this method is only limited by the time required to load and unload and the rate of percolation. At the time these tailings were placed in these dumps no thought was given to preparing them chemically to assist automatic extraction of the contained gold, but the fact that the writer discovered that chemical action had been going on, suggests a condition of importance, worthy of the attention of all metallurgists. In this instance mentioned, I incline to the opinion that if an extra pound of caustic alkali is added in future to each ton of these tailings at the time of the final washing, the automatic dissolution will render soluble in water a higher percentage of gold than the above tests prove to exist as a result of past practice.

ELASTIC SUSPENSION FOR DRILLING RODS.

M. Petit writes to "Naphtha" that in the course of drilling a hole with a Canadian rig, he recommended the employment of a spring temper-screw attached to the walking beam, as shown in the drawing. The screw (1), 80 in. long, was passed through the tapped hub, 2, of a horizontal wheel resting on the bearing 3, which was fitted with trunnions 4, 5, engaging in slots cut in the bearing blocks 6, 7, bolted on to the walking beam 8. By means of the wheel the screw could be adjusted vertically to any desired length, the wheel being kept in position by strong pegs; and this simple arrangement gave very satisfactory results.

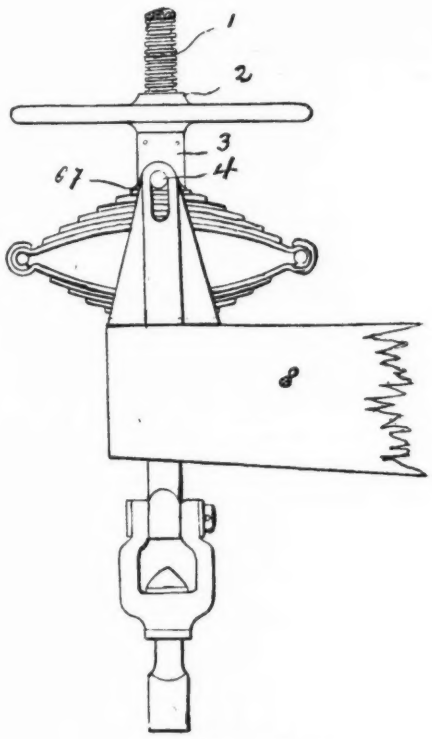
The owner of the mine where this boring was carried on (M. Laporte) conceived the idea of interposing flat springs between the bearing 3 and the walking beam, in order to diminish the shock to which the string of tools is exposed at each stroke; an arrangement at once enabling the rate of speed and efficiency of the rig to be considerably increased, and at the same time rec cing the resistance to be overcome by the engine.

This trial boring, conducted on the water-flush principle, although effected with a Canadian crane, which is little suited to this class of work, nevertheless shows decisively that drilling with rigid hollow rods, through which a strong current of water is injected to the bottom of the bore hole, is far superior to the ordinary method of drilling with solid rods and jars without a water flush.

It might have been anticipated that in the oligocene formation at Kobylanka, consisting mainly of compact sandstone, often extremely hard, and rarely interspersed with thin layers of hard shale, the

method of drilling with short (3-in.) strokes at high speed (140 strokes per minute) would be surpassed by the method of drilling with long (20-in.) strokes at a maximum speed of 60 per minute. Nevertheless the contrary was found to be the case. In the sandstone strata, where a rate of progression of not more than 64 in. could be attained in 12 hours by the Canadian method, fitted with the best tools, the rate with the water-flush system was 0.4 in. per minute, 24 in. per hour, or 224 in. in 7 hours, nearly three times as great. In compact formations as well as in those of the oligocene epoch, the use of the temper screw with spring, as shown in the drawing, enables one to drill as fast with the Canadian crane as by the water-flush method. A trial boring with this arrangement and jars showed that by using a 16-ft. sinking bar, 5½ in. in diameter, with jars of 80 in. stroke, 1-in. rods attached to the temper screw by a swivel connection, and by working at the rate of 50 strokes per minute, a regular free-fall method of boring can be produced.

At each stroke of the bit the shock of the jars compressed the spring by several centimeters. At the moment when the walking beam has completed its upward movement a sudden stop occurs. The whole string of tools tends to jump upward, being assisted in that tendency by the springs, which suddenly expand; as, however, the rods are closely attached to the screw, and this in turn to the walking beam, the bit and sinker bar alone continue this movement, the rods beginning to descend. In the instant that the walking beam has completed its down stroke the bit falls freely on to the bottom of the bore hole.



SPRING DRILL-HEAD.

At the speed of 50 strokes per minute the bit works with a 40-in. stroke, half of which is due to the movement of the walking beam and the remainder to the rebound produced by the sudden relaxation of the spring. Notwithstanding that the jars have a stroke of over 40 in., it often happened that the lower link came in contact with the upper one.

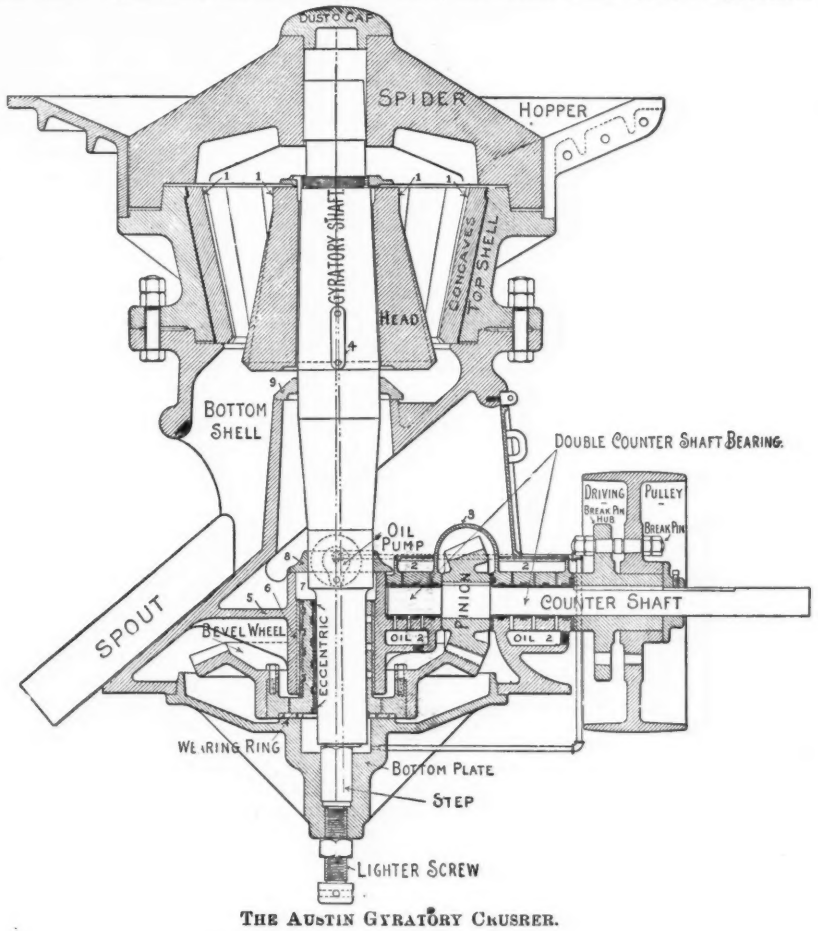
The force of the blow delivered by the bit on the bottom of the hole was surprising, and a rapid rate of progression was maintained, 20 to 23 ft. being drilled in 12 hours through strata where the rate under the ordinary method did not exceed 80 in. Owing to the use of a light sinker bar and the reduction of vibration by the springs, no breakage of rods occurred; the strain on the engine was reduced by one-half, while the rate of drilling was increased two and even threefold, the new method thus affording solid advantages.

THE AUSTIN GYRATORY CRUSHER.

The F. C. Austin Manufacturing Company, of Chicago, and Harvey, Ill., is building a gyratory crusher, a cut of which is given herewith. Many of these machines are in operation crushing ores at mines in the West. One of the prime factors in a gyratory crusher is the adjustment of the crushing heads so as to keep the product uniform in size and take up the wear of both head and concave. In the Austin crusher the main shaft is raised by means of a screw at the bottom, and the size of the receiving openings at the points, 1, 1, is not diminished or increased by the adjustment of the shaft, owing to the construction of the head. It will be noted that the head is straight for a few inches and then begins to taper off. It is evident that in a crusher having an ordinary conical head this opening must become narrower as the shaft is raised, but it is not so with the Austin, because the eccentric bearing is supported by the heavy diaphragm 5, thus becoming part of the main frame. This construction is very rigid and removes from the bottom plate the great strain to which most crushers are subject. The countershaft bearing is arranged with a support on each side of the driving pulley, which allows this pulley to be placed close to the machine. The tendency to spring the countershaft is entirely overcome, owing to the larger bearing thus obtained, and less floor space is required.

It is absolutely essential that the main eccentric and countershaft bearings should be oiled continuously and thoroughly. The Austin crusher is provided with an oiling system designed to meet this requirement. It consists of an oil pump, connected with the gyratory shaft so that it is pumping all the time while the crusher is in operation and a constant circulation of oil through the bearings is kept up. In addition to the pumping system, the oil thrown from the surface of the driving pinion is caught in a cup 3, and carried back to the lower reservoir 2, 2, which may be cleaned at any time. This is a very commendable feature. There is no better demonstration of the advantage of having journals run in oil than is found in high-speed engines, where the countershaft, wrist-pin and crosshead are submerged in oil or water.

The Austin crusher is dust proof, which is of much importance. In addition to the dust rings 8 and 9, the eccentric and gears are protected by the diaphragm 5, and the cap 3. In fact, the construction is such that the vital parts are entirely enclosed, and this, together with the oiling system, will account for their long life.



THE AUSTIN GYRATORY CRUSHER.

When adjustment is made by lifting the shaft the same bearing surface of the eccentric is maintained, owing to the fact that in its normal position the shaft projects below the eccentric and the gear drives from the bottom of it, giving increased leverage. Unlike other crushers, the detachable bottom plate is relieved of all crushing strain and the only function it performs is to sustain the downward weight of the main shaft and cone. The eccentric is light and easily handled, therefore easily removed when it is necessary to re-babbitt. The jaws, both head and concave, are made of manganese steel, their faces thoroughly chilled, and they are adapted for crushing the hardest rock.

IRON ORE IMPORTS.—Imports of iron ore into the United States for the 10 months ending October 31st, were 772,608 long tons, against 498,330 tons for the corresponding period last year, and 150,954 tons in 1898.

COAL DISCOVERIES IN AUSTRIA-HUNGARY.—United States Consul Hughes, of Coburg, writing under date of October 31st, 1900, says he has been informed from reliable sources that a large deposit of coal has been discovered at Barmocz, in Hungary. This deposit is to be developed on scientific lines at once, arrangements having been made to deliver to the railroads from 400 to 500 truck loads per day at a very early date. The quality of this coal remains to be proved. Another field is also said to have been discovered in Bohemia, but very much smaller in size and of poorer quality, which is, however, to be developed in the early part of next year if the necessary arrangements can be made.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid. We cannot undertake to return them. If analyses are wanted, we will turn specimens over to a competent assayer, should our correspondent instruct us to do so and send the necessary money.—Editor E. & M. J.)

256.—Emerald.—Crystals of emerald are reported in the Coffee Creek District, Trinity County, Cal.

257.—Supposed Corundum.—C. E. S.—Neither of the specimens are corundum. The dark specimen is a hornblende mineral, tremolite. It is much softer than corundum and the crystalline form is entirely different. The reddish specimen contains several minerals. The hardest of them is in flat crystals and is apaprently andalusite. The specimen also contains quartz and fibrolite.

258.—Ore.—Quartz.—H. J. C.—The specimen is a piece of white and granular vein quartz. It contains no malleable metal. Better send another sample.

259.—Vein Rock from Mexico.—W. N. C.—It is practically impossible to determine the original character of such thoroughly altered rock as the sample you send, except by analysis and microscopic examination. The rock may have been a dike, but the original crystals have disappeared, and the rock is now almost a clay, containing some fresh calcite. The rock may have been an elaeolite syenite.

260.—Rock from Labrador.—C. A. M.—The black rock is a typical basalt, an ancient volcanic rock.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Use of Iron in Assaying.—In assaying sulphide ores, such as galena or pyrites, it is customary to put a bar of iron or some nails into the pot, with the object, we are told, of withdrawing sulphur from the lead and decomposing any regulus formed. I know from experience that it has this effect, but why? Surely it seems reasonable to expect that by taking sulphur from the galena it would merely form, instead, a sulphide of iron, and thus increase instead of reduce the amount of regulus or matte formed. I have never seen in any work on metallurgy I have read, any mention made of sulphide of iron going into the slag except as an accidental occurrence.—Rossland.

Answer.—Iron is used in assaying sulphide ores because it has a great affinity for sulphur. The sulphide of iron formed is oxidized and is fluxed off with the silica, lime soda, etc., present in the slag as oxide or silicate.

Refining Copper Bullion.—Is it a fact that until the electrolytic method —which is a comparatively recent one—was adopted, the only means of recovering the precious metals from metallic copper was to convert the copper into a sulphate and dissolve it out? It seems hard to believe this, and still I can learn of no other means being or ever having been employed.—W. F. C.

Answer.—The separation by dissolving in sulphuric acid and the formation of copper sulphate was the most usual method of separating precious metals from copper, but others were used. Thus two at least are described in Schnabel's "Handbook of Metallurgy" (Louis' translation, Volume I, page 464) as follows: "Copper alloys easily with silver, and argentiferous copper is produced in the smelting of argentiferous copper ores or when silver and copper ores are smelted together.

"Silver can be separated from copper alloys by electrolysis, or, if treated with mercury, the silver is taken up by the latter metal. If the alloy be melted with lead, a silver-copper-lead alloy is obtained, and if this be heated to a higher temperature than the melting point of lead, a lead-silver alloy flows from it, leaving behind the copper, deprived of the greater portion of silver (liquation).

"If the silver-copper alloy be powdered and roasted with common salt, the silver is converted into silver chloride, the copper being then present mainly as oxide. If the alloy be melted with an excess of sulphur, sulphides of both metals are produced (matte), but if an insufficient amount of sulphur is present, it combines with the copper, and silver separates in the metallic state."

Pumping Oil Wells by Compressed Air.—I have heard that this method of pumping oil wells has been or is in use in Russia. Can you give me any information?—Naphtha.

Answer.—Mr. C. F. Z. Caracristi writes us as follows: "As to the use of compressed air in raising petroleum from the Russian wells, I desire to say that some years ago my friend, M. E. Appostoloff, an oil expert, then living in Baku, tried the use of compressed air in the pumping of wells. His method was to put in a cap over the casing so as to 'close in' the well. The center of this cap was attached to a 1-in. pipe that extended nearly to the bottom of the well. Another 1-in. pipe projected from the cap. Through this pipe, which entered the well only a few inches, the compressed air was admitted, and the oil forced out of the first pipe. We found only one trouble with this appliance, and that was that the exhaust pipe was of too small a diameter to carry the heavy Russian oil. I am not familiar with other methods referred to, but the principle is the same as that of gas pressure forcing the petroleum out of natural flowing wells. A pressure of 250 lbs., however, would not raise oil from the deep sands, and I greatly doubt the practicability of the plan except in shallow wells, which could be pumped much more economically.

"I have on several occasions attempted to extract petroleum from wells by the use of a specially constructed electric arc light being lowered in the bottom of the well. The object was to generate gases that would eject the petroleum in the same manner as the Appostoloff compressed-air device. The results were highly favorable except for the fact that I could not maintain the insulation of my electrical conductor. This device had the double advantage that it not only pumped the petroleum, but also prevented the accumulation of residuum in the well."

The American Lead and Baryta Company.—Can you furnish any information relative to this company, which is now sending out many circulars, etc.?—Investigator.

Answer.—The American Lead and Baryta Company, of Missouri, we understand, is capitalized at $10,000,000, and with $1,250,000 of bonds which it is now endeavoring to place. The floating of the property appears to be based upon a report by Prof. Clark, of Baltimore, a very competent geologist, but certainly, judging from this report, not an experienced practical mining engineer.

The statements in the prospectus are far from being sustained by the facts. It is announced that the property probably contains the disseminated lead ores of southeast Missouri. This we understand is not the case, for the property is not on the extension of any of these disseminated ore bodies, which are very well defined and proven by borings and shafts. The zinc ore, upon which a considerable value is placed in the prospectus, we are informed by experts who have examined the property is also of no commercial value. A high value is given in the prospectus to the iron ore, which we are also advised has no commercial value. The barytes, which are counted as a chief asset, exist and are mined on portions of this property, but the estimates of possible profits from their working are vastly overstated. The timber on the property is also stated to be of great value, but as a matter of fact timber experts do not so consider it. What there is, is largely wind-shaken timber and has little commercial value. The property, or certainly a large part of that on which the chief values are placed, was examined about a year ago by competent experts and refused at a price of less than $200,000. To-day we understand that responsible and highly reputable financial firms in Baltimore are considering the purchase of the $1,250,000 of bonds. If this should materialize it would be one of those things that bring mining into disrepute and prevent the investment of capital in it; it is therefore to be hoped that parties who may have the matter under advisement will have the property carefully examined by competent practical experts before they part with their money. It may not be amiss also to state for the benefit of investors in general that it is as necessary in mining as in other enterprises to investigate the people with whom we propose to become associated as it is to examine into the intrinsic value of what we buy, and this advice should not be forgotten in this case.

PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of the patents relating to mining and metallurgy and kindred subjects, issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending December 4th, 1900.

662,910. APPARATUS FOR APPLYING COATINGS. Clarence R. Britton, Cleveland, Ohio. In coating apparatus, a pair of rollers, at least one of which is provided with the coating metal, the rollers being arranged to receive the sheet or plate between them, means for heating the coating material, and mechanism for moving at least one of the rollers relatively to the sheet to apply the coating by abrasive action.

662,916 and 662,917. DEVICE FOR HOLDING ROUNDS FOR ROLLING MILLS. Joseph Daschbach, Pittsburg, Pa. The combination with suitable rolls and a feed table, of guide rods or bars, supports therefor, and a buggy mounted on the guide rods having side wings projecting over the guide rods and their supports.

662,920. GAS-MAKING APPARATUS. Robert M. Dixon, East Orange, N. J. The combination with the liquid-sealing portions thereof, of a receptacle for the tar generated by the apparatus, and means for producing circulation of the tar from said receptacle to the sealing portions of the apparatus, and back to the tar receptacle.

662,923. GAS PRODUCER. Edward J. Duff, Liverpool, England. A gas producer having inclined gratings at opposite sides of the lower portion of the producer casing, and a space between the gratings communicating with a water-sealed-bottom trough, an inlet for air or air and steam beneath the gratings on one side, a pipe leading from the upper portion of the fuel bed and communicating with a space beneath the gratings on the other side; and a side flue extending upward from about half the height of the fuel bed.

662,929. PROCESS OF MANUFACTURING SOLID SUBSTANCES FROM FIBROUS MATERIAL AND PRODUCT THEREOF. Willibald Gelinek, Merzdorf, Austria-Hungary. The process consists in first preparing an impregnating substance of coal-tar, colophony, asbestos, kaolin, infusorial earth and lime, then mixing this with fibrous material, and while hot compressing the plastic mass thus obtained, under high pressure.

662,951. MANUFACTURE OF ALLOYS OF ALUMINUM AND MAGNESIUM. Ludwig Mach, Jena, Germany. The alloy process consists in alloying the two metals in the proportion of 100 parts of aluminum to not less than 2 nor more than 10 parts of magnesium, and then modifying the resultant alloy by mechanical compression.

662,952. PROCESS OF MAKING ALUMINUM ALLOYS. Ludwig Mach, Berlin, Germany. A process consisting in adding from 2 to 10 parts of magnesium to every 100 parts of melted aluminum and then suddenly chilling the alloy thus obtained.

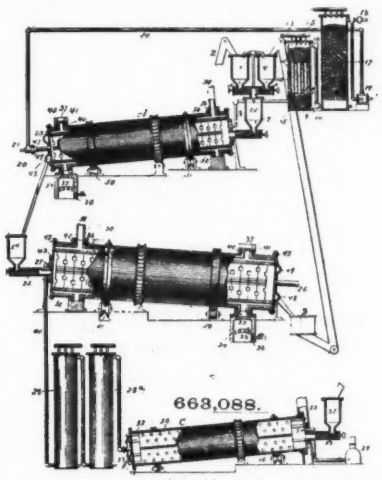
663,024. PROCESS OF STRIPPING TIN FROM TINNED IRON AND RECOVERING THE METALS. Henry W. Hemingway, London, England. The process consists in treating the tinned iron with a solution of persulphate of iron, continuing to add iron until the persulphate is converted into protosulphate and the tin thrown down as a precipitate, collecting the latter and recovering the tin therefrom.

663,029. OIL-WELL PUMP. James Hersley, Globe Mills, Pa., assignor of one-half to Charles E. Perkins, same place. The combination, with a line of tubing having a coupling provided with an internal tapered seat, of a hollow stationary plunger provided at its lower end with a series of expansible packing rings with intervening separators and a securing nut, such rings being adapted to be expanded by pressure of the contained fluid.

663,033. GALVANIZING FURNACE. Harry B. Lynch, Versailles, Pa. A furnace having longitudinally-extending gas-supply flues on each side of and below the level of the pot, combustion chambers on each side of the pot and extending up the walls thereof, outlet flues extending longitudinally of the pot outside of the combustion chambers, and gas ports leading from the gas-supply flues vertically into the combustion chambers and air-supply ports.

663,034. APPARATUS FOR DIPPING PIPES OR BARS. Harry B. Lynch, Versailles, Pa., assignor to the National Tube Company, New York, N. Y., and Pittsburg, Pa. The combination with a tank, of a rotary shaft above the same, arms carried thereby and adapted to sweep through the tank.

663,088 and 663,089. APPARATUS FOR MAKING CHLORINE. Paul Naef, New York, N. Y. The combination with a furnace, of a hopper communicating therewith, two hoppers communicating with said



first-mentioned hopper, a gas outlet at one end of said furnace, a discharge pipe communicating with the other end of said furnace, and means for injecting gas into the outlet end of said furnace.

663,126. AIR COMPRESSOR. Henry Liethegener, St. Louis, Mo., assignor of one-half to Joseph Zentner and Adam Klemm, same place. The combination with a rolling weight, of a lever in the path thereof and engaged and depressed thereby, a plunger connected to said lever, and a lever in the path of said rolling weight and acting when depressed to raise the first lever.

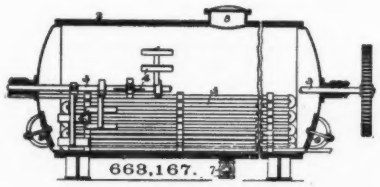
663,140. DIE FOR FORMING CLAY. William Walker, Allegheny, and Harry W. Croft, Pittsburg, Pa. The combination of a die provided with convex inner faces, removable lining plates for said die, provided with convex inner faces and acute-angled edges corresponding to and adapted to closely fit the curved inner faces of the die.

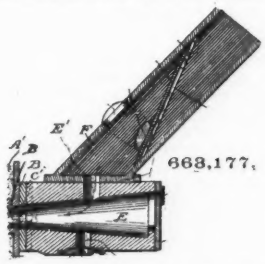
663,141. FORMING CLAY BLOCKS. William Walker, Allegheny, and Harry W. Croft, Pittsburg, Pa. An improvement consisting in forming the blocks with one or more slightly concave faces, maintaining said block in such form for such a period of time that its shape shall become fixed, and then drying or burning the same, the degree of concavity being such that the expansion of the block in drying or burning will form substantially flat or parallel faces.

663,155. MANUFACTURE OF SHEET METAL. John F. Budke, Cannonsburg, Pa. The method consists in pickling and cleaning the sheets as they come from the hot rolls, cold-rolling the pickled sheets, and then annealing the cold-rolled sheets.

663,166. PROCESS OF MAKING EXPLOSIVES. Adam C. Girard, Paris, France. The process consists in solidifying an oil by dissolving therein a suitable soap, and then adding a chlorate to support combustion.

663,167. METHOD OF MAKING ALUMINA. Charles M. Hall, Niagara Falls, N. Y. In the treatment of aluminous materials with alkaline caus-

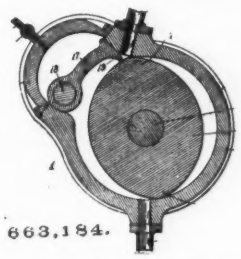


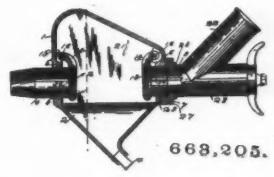


tic liquor in a digester for conversion into sodium aluminate, the improvement which consists in adding lime to the mixture under treatment in the digester whereby any carbonate of soda present in the caustic liquor is decomposed, and the silica eliminated.

663,177. TUYERE FOR BLAST FURNACES. George B. Klink, Tacoma, Wash. The combination with a tuyere provided with the usual horizontal opening leading to the furnace and a communicating opening leading up therefrom through the shell, the upper side of the tuyere surrounding said opening being flat and horizontal, of an inclined rectangular blast-pipe leading upwardly and outwardly, having an escape opening in its upper face, and a horizontal lower head or end resting on the flat upper surface of the tuyere and provided with an opening registering with the vertical opening of the tuyere, straight ribs on the inner side of the blast-pipe inclining from its top to its bottom face, a flat valve pivoted at its upper end to the inside of the blast-pipe at the upper ends of and above said ribs, and a weighted head or button on the upper face of said valve adapted to normally hold the valve down when closed and to serve as a stopper to close the escape opening in the upper face of the blast-pipe when the valve is open.

663,184. ROTARY PUMP. William Morris, Youngstown, Ohio. The combination with the cylinder having an extension forming a valve opening provided with an air inlet and cock, and said cylinder provided with inlet and outlet passages, of the oval-shaped piston, the pivoted valve having a laterally-extending toe at the free end and constructed to always have its toe in contact with said piston,





the valve shaft thereof, the crank arm connected therewith, the eccentric strap, the eccentric rod connected therwith and with said crank arm, the shaft upon which said eccentric is mounted, and the gearing whereby said eccentric makes two revolutions to each revolution of the piston.

663,205. TUYERE. John E. Willis, Lincoln Boyd and Jacob Hill, Pueblo, Colo. A tuyere, comprising a casing, having an inlet blast pipe, a discharge nozzle, and means for closing the blast pipe and the nozzle constructed and arranged to operate by the cutting off or weakening of the blast.

663,212. GRAVEL SEPARATOR. Arthur Beargeon, Compton, Cal. The combination of a frame, a plow arranged therein, and screens arranged on each side of said plow and connected with said frame.

663,213. MACHINERY FOR DISCHARGING GAS RETORTS. Gaston A. Bronder, New York, N. Y. The combination with a carriage and a rake carrier arranged to run therein, of a motor cylinder and a fixed rack and a flying rack all on said carriage, a gear carried by the piston rod of said motor cylinder and engaging with both of said racks, sheaves pivotally attached to said carr age, sheaves pivotally attached to said flying rack, and a rope connected at two points with said carriage and also connected with the rake carrier and running on said several sheaves.

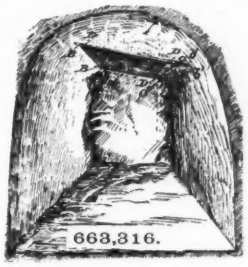
663,251. CONVEYOR. James W. Barney, Kansas City, Mo. A conveyor system, in which means are provided for forming a main run and a plurality of auxiliary runs with connecting runs for bringing either one of the auxiliary runs into and uniting it with the main run, for forming a continuous conveyor.

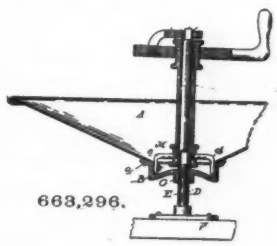
663,296. GOLD-PAN. Daniel B. Newkirk, Detroit, Mich., assignor, by direct and mesne assignments, to the Miners' Supply Company, Limited, same place. The combination with a standard, of a pan secured thereto, a tubular member sleeved upon the standard for independent rotary movement, stirrer mechanism carried by the tubular member, an operating device for rotating said tubular member independently of the pan, and means for locking the operating device to the pan.

663,310. DUMPING CAR. Isaac L. Vansant, Philadelphia, Pa. A floor having a discharge spout therein, and divergent shutters for closing the same in combination with means for raising the shutters, the top edges of said spout forming a seat for said shutters.

663,304. MAGNETIC SEPARATOR. Frederick Theilengerdes, Memphis, Tenn., assignor of one-half to Walter Goodman, same place. The combination with an inclined hinged feed board, of a flat electromagnet core beneath and extending nearly from end to end of the same, and having its broad ends turned upward into slits in the board, approximately parallel bars of magnetizable material sunk in the upper surface of the board and resting upon said ends, non-conducting plates resting against the upturned ends and oppositely-extending lugs, and a coil wound about the core between said plates.

663,316. AWNING FOR MINE SHAFTS OR TUNNELS. Benjamin B. Wheeler, Apex, Colo. An awning for averting drip in mines and





tunnels, comprising two sets of telescopic tubes, each tube having a pointed outer end, screws for clamping the tubes of each set on each otner, and the awning proper, having hems at opposite edges, to receive said tubes.

663,340. MIXTURE FOR SILVERING METALS. Christian Gottig and Walther Kottgen, Wilmersdorf, Germany, assignor to Ludwig Darmstaedter, Berlin, Germany. A mixture comprising silver chloride, a compound whose solution is capable of dissolving silver chloride, and a metal chloride capable of preventing the permanent reduction of the silver chloride by the action of light.

663,344. METHOD OF MAKING PLATED WIRE. John T. Healy, Attleborough, Mass. The method of making an ingot for the manufacture of seamless plated wire, which consists in applying a sheet of precious metal having its longitudinal edges thinned or beveled and lapped upon each other, to the surface of the base-metal ingot, with a suitable flux between the contact surfaces, applying a thin covering of sheet asbestos or paper, and then winding with wire, and subjecting to the proper degree of heat to cause the sweating together of the contact surfaces of the base and precious metals.

663,370. LIQUID HYDROCARBON. George Taylor and Isaac Ray, London, England. A liquid hydrocarbon for the manufacture of gas for illuminating and other purposes, consisting of a mixture of gasolene having a flash point of about 66° F., with cocoanut oil and crude petroleum.

663,375. MACHINE FOR EXTRACTING GOLD. George Webster, Parramatta, New South Wales. The combination of a comparatively long, shallow covered-in passage or chamber, a lining on the bottom of the same, a hopper at one end of said chamber, and a conical catch receptacle arranged at the discharge end and having riffles arranged one in advance of the other, toward the delivery end of said chamber, said catch receptacle also having an outlet at its bottom controlled by a cock.

PERSONAL.

Mr. D. H. Lawrence, of Waldo, Ore., has been in San Francisco.

Mr. John B. Farish, of Denver, Colo., was in New York City last week.

Mr. Wm. A. Farish, of Denver, is at present in California on professional business.

Mr. Thomas Couch, of Montana, Massachusetts and California, has been in San Francisco.

Mr. T. A. Rickard, State geologist of Colorado, arrived in New York from London on December 16th.

Mr. Alvin Marsh, of Denver, was in Central City, Colo., last week looking after his mining interests.

Mr. Stephen Rickard, assayer, has removed his office in Denver to 1727 Stout street, opposite the Albany Hotel.

Mr. E. S. Moulton, of Boston, Mass., has been looking after his mining interests in Gilpin County, Colorado.

Mr. H. J. A. Wilkins, connected with the New Jersey Zinc Company, of New York City, is on a visit to Germany.

Mr. C. W. Pritchett, Jr., mining engineer, of Denver, Colo., has just returned from a professional trip to New Mexico.

Mr. Frank Nicholson, of Joplin, Mo., is at present in New York, and expects to remain there until January 10th.

Mr. J. L. Parker, recently of Port Arthur, Ont., is now connected with the Dominion Copper Company at Phoenix, B. C.

Mr. John Hays Hammond, who has been in New York City, has gone West again and expects to remain West for some time.

Mr. A. L. Waters, of Globe, Ariz., has returned to Matape, Sonora, Mexico, where he is in charge of mines owned by the British Gold Mines Company.

Mr. T. H. Oxnam, of Capt. J. R. De La Mar's staff, has gone from Redding, Cal., to examine property in the vicinity of the Palmaejo Mines, Chinipas, Mexico.

Mr. Hal W. Hardinge, mining engineer, of Denver, Colo., has left for New Mexico, Arizona and California on professional business, to be absent about 3 weeks.

Mr. G. M. Hyams has resigned as consulting engineer of the Anaconda, Parrot and all the other copper mines controlled by the Amalgamated Copper Company. He remains with the Boston & Montana.

Mr. W. E. H. Carter has been appointed secretary of the Ontario Bureau of Mines. Mr. Parker is a graduate of the Toronto School of Science and has had experience in Western Ontario and British Columbia.

Messrs. Samuel Hill, C. M. Amsden, F. A. Smith, of Minneapolis; Prof. F. W. Taussig, of Harvard University, and Mr. Francis McLennon, of Montreal, have been inspecting the prominent mines of Rossland, B. C.

Mr. Sam. A. Baxter, Lima, O.; H. W. Gebaur, Cleveland, O., and Judge Goddard, of Denver, interested in the Argosy Mining Company operating in Gilpin County, Colorado, were examining their mining interests last week.

Mr. Thomas F. Cole has resigned as general manager of the Mass Mine, Ontonagon County, Mich., and will give his entire time to looking out for the interests of the Oliver Mining Company, of which he is general superintendent.

Mr. Samuel C. Bennett has tendered his resignation as superintendent of the Menominee Range properties of Corrigan, McKinney & Company, to take effect January 1st, 1901. Mr. Bennett has been on the Menominee Range in charge of properties for 14 years.

Messrs. Nat Baxter and E. O. Hopkins, presidents respectively of the Tennessee Coal, Iron and Railroad Company and the Sloss-Sheffield Steel and Iron Company, whose headquarters are in Birmingham, Ala., have recently been to meetings of their directors in New York.

Mr. Harry Edlin, once superintendent of the War Eagle Company's operations at Quartzburg, Idaho, has gone to Sonora County, Cal., where he will take charge of the Virtue Mine. Mr. Edlin had charge of this property in its early days, staying till after the 60-stamp mill was in operation.

Mr. Y. Watanabe, architect of the imperial Japanese navy, has contracted with the American Bridge Company for the steel work for a foundry and a gun and mounting shop for the Kure arsenal. The American Bridge Company is also furnishing steel work for the forge shop for the Kure arsenal.

Mr. Eugene Zimmerman, of Cincinnati, O., who owns and operates the Talladega, Ala., furnace and railroad property between Talladega and Pell City, Ala., has changed his mind as to making Talladega his winter residence and will reside with his daughter, the Duchess of Manchester, in Cincinnati.

Mr. J. Keith Fisher, of the British Columbia Portland Cement Company at Vancouver, B. C., has organized a company of American capitalists to establish cement works near Sydney, on Vancouver Island, B. C. The works are to have an ultimate capacity of 2,000 bbls. a day, operated by electric power.

Mr. E. L. Bridges, who has been for 16 years paymaster for the Birmingham rolling mills and with the Republic Iron and Steel Company in the Birmingham District, has resigned. Mr. James Weisel, cashier with the Republic Company, and who previous to the absorption was with the Pioneer Mining and Manufacturing Company at Thomas, has also tendered his resignation. Mr. C. Dixon succeeds Mr. Bridges.

Mr. Milton F. Williams, of the Williams Patent Crusher and Pulverizer Company, of St. Louis, Mo., who recently returned from an extended trip to Great Britain and the continent, has sold his patents for one country, established agencies in others, and has become a member of a company which has been formed in England to begin the manufacture for the trade. Mr. Williams is now preparing a shipment of his crushing and pulverizing machines for a foreign destination.

Mr. J. P. Colp, of Denver, who at one time had charge of the Silver Pick Mine in Mt. Wilson District, San Miguel County, Colo., and who since then has been managing properties in Mexico, has accepted the charge of some extensive gold properties (quartz and placer) in Dutch Guiana, South America, for the Amsterdam Company, which has bought them and is now on his way there with his family. He was in New York this week. Mr. Colp takes with him 5 Americans who have had experience in the West. He will probably remain in South America during the coming year.

OBITUARY.

F. Koerner, for many years a prominent mining and mechanical engineer of Wilkes-Barre, Pa., died at his residence in that city on December 16th. Mr. Koerner was of German birth and had an excellent education. He went to the anthracite region of Pennsylvania over 40 years ago and soon became well known for his abilities as a mechanical engineer. He was for some time manager of the Wyoming Valley Machine Shops at Wilkes-Barre. Later he had charge of a number of important mines. For several years past his health had been poor and he had lived in retirement.

SOCIETIES AND TECHNICAL SCHOOLS.

Lehigh University.—A 4-years' course in physics, designed primarily for those who desire a general scientific training or who wish to become teachers of science or specialists in some branch of physics, has been added to the curriculum. During the last 2 years of the course the student is allowed to make several electives from a long list in history, philosophy, politics, drawing, hydraulics, mineralogy, geology, metallurgy, chemistry, and astronomy.

Engineers' Club of St. Louis.—At the last meeting of the Club 31 members and 9 visitors were present. Messrs. Frederick P. Spaulding, Francis J. Llewellyn and Warren A. Tyrell were elected members. The paper of the evening was on "Street Lighting of Cities," by Mr. H. H. Humphrey. The developments appear to be along the lines of the enclosed arc lamps and the improved mantle gas lamps quite familiar to St. Louisans. Comparisons were made between the direct current series enclosed arc and the alternating series enclosed arc. The comparative difference in candle power of the two lamps with the same consumption of energy being unquestioned, the former lamp was adopted in connection with the new lighting contract. The city required 480 watts at the arc regardless of the candlepower, but thanks to the engineers of the plant, at least in this instance, they give the public the benefit of the 16% increase in light.

A general description of the new City Lighting Plant was given with a discussion of its principal engineering features, also a data sheet giving a test of one of the units and some data obtained from a test of another high-voltage plant.

A number of slides in connection with the city lighting plant were exhibited.

The discussion of the paper was participated in by Messrs. Humphrey, Flad, Kinealy, Bouton, Spencer, Roper, Reber and Hermann. The meeting adjourned to an adjoining room, where lunch was served.

INDUSTRIAL NOTES.

The Delaval Steam Turbine Company, of New York City, is about to erect a large factory at Trenton, N. J. Walter H. Foster, of New York, has been retained as consulting engineer, and he is supplying the company with the machinery. The company will build steam turbines.

The Harrington & King Perforating Company, of Chicago, Ill., has recently improved its machinery equipment, and is extending its manufacturing facilities. The firm reports trade as increasing not only from domestic sources, but from foreign countries. It has just received a large order from New South Wales and is doing considerable work destined for Cuba.

The record in turning out rods was broken at No. 2 rod mill of the Joliet plant of the Illinois Steel Company last week. The night turn made 537,700 lbs., or 240 gross tons, of rods, and not only gave the mill the world's record for a single night's work, but made the month's production of the mill the greatest ever turned out by any rod mill in the world. The mill has an average for the month of 196 gross tons.

The Lunkenheimer Company, of Cincinnati, O., has opened its new factory. The building is 90 by 175 ft. and 2½ stories high, and was built to receive the departments making iron valves of all kinds, injectors and safety valves. The steam boiler to supply heat, power and light for the factory has been tested to 700 lbs. per sq. in., and will carry 400 lbs. pressure. The officers of the company are E. H. Lunken, president; D. T. Williams, vice-president; C. F. Lunkenheimer, treasurer; S. L. Moyer, secretary; Wm. Huench, auditor. Henry Ritter is superintendent of the manufacturing department.

The Sturtevant Engineering Company recently moved its London office to 147 Queen Victoria street, that city, in order to secure the increased accommodation necessary for its rapidly growing business as the European representatives of the B. F. Sturtevant Company, of Boston, Mass. A new branch office has been established at 31 Rue de Provence, Paris, and the location of the Glasgow office changed to 45 Hope street. The offices at Berlin, Stockholm, Amsterdam and Milan remain the same. The company has removed its Chicago office to much larger quarters at 281-289 South Clinton street.

The Bethlehem Steel Company, of South Bethlehem, Pa., reports that a contract has been closed with the General Electric Company for 6 more weldless field-rings of Bethlehem nickel-steel for the extension to the big power-plant at Niagara Falls. These rings measure 142½ in. outside diameter, and 130¾ in. inside, leaving the walls 5⅞ in. thick. The width of face is 50¼ in. and the estimated weight of each ring is about 35,000 lb. They will be worked up on a mandrel under the hydraulic press, and are said to be among the largest forgings of this sort which have yet been produced. Among other orders now in hand at the Bethlehem works may be noted the shafts and engine forgings for one of the new ferry-boats which are under construction at the yards of Harlan & Hollingsworth Company, Wilmington, Del., for the New York ferry of the Central Railroad Company of New Jersey.

TRADE CATALOGUES.

Bulletin 500, published by the Browning Engineering Company of Cleveland, O., describes a very compact steam dock capstan. The company states that this capstan is especially designed to withstand hard usage and neglect and is provided with ample protection for the mechanism.

The Fairbanks Company, of New York, Boston, Pittsburg, Montreal and London, issues a handy and compact illustrated catalogue of 698 pages provided with an unusually good index. The catalogue describes the company's standard scales, known the world over, and also contains price lists of gas, steam, mill, factory and railway supplies, tools and machinery. Among the scales described are wheelbarrow scales for weighing coal and ore; furnace stock charging scales, copper scales, mine scales and railway track scales. The steam fittings include brass globe angle and check valves, iron body valves, steam pipe and boiler tubes, and iron pipe fittings, including hydraulic fittings. Pipe fitters' tools in great variety are shown; also vises, wrenches, drills, tackle blocks, lumbermen's supplies, conveying machinery, shafting, sledges, trucks, barrows, coal buckets, ore cars, lathes, milling and boring machines, etc.

Wire rope made of steel or iron and galvanized wire for shafts, slopes, quarries, bridges, aerial tramways, derricks, haulage plants, dredges, cableways and rigging is illustrated in the 76-page catalogue published by the Hazard Manufacturing Company, of Wilkes-Barre, Pa. The company state that it has been manufacturing wire rope since 1848, and that it keeps

on hand at its New York and Wilkes-Barre warehouses all sizes and kinds of wire rope, wire strand and seizing, market wire, telegraph and telephone wire; also sheaves, blocks, clamps, clips, thimbles and fastenings. The company also states that its ropes are made of the best brands of charcoal iron, crucible cast steel and plough steel wire. Hazard hoisting rope is stated to be composed of 6 strands, 19 wires to the strand laid about a hemp wire; transmission and haulage rope is composed of 6 strands and a hemp center, 7 wires to the strand; plough steel rope is composed of 6 strands and a hemp center with 19 wires to the strand. Hazard flat wire ropes are made ½ in. thick, 3 to 7 in. wire, and ⅜ in. thick, 2 to 25½ in. wide. The catalogue contains a large amount of data about breaking strains and weight of rope, directions for splicing, etc.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" what he needs he will be put in communication with the best manufacturers of the same.

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GENERAL MINING NEWS.

November Petroleum Returns.—The shipments of Pennsylvania oil for November showed a decided gain over October; there was a decrease in the pipe line runs and the net result is a decrease of nearly 250,000 bbls. in the stocks, says the Oil City "Derrick." The Pennsylvania runs averaged 98,238 bbls. a day in November, a falling off of 4,890 bbls. a day from the October average. The shipments were 104,825 bbls. a day, which was a gain of 7,979 bbls. over October. The stocks of Pennsylvania oil decreased 247,692 bbls. in November, while the Buckeye stocks showed a gain of 222,129 bbls., which makes a total decrease for the month of 25,563 barrels, or an average decline of 852 bbls. a day.

The net stocks of Pennsylvania oil were 13,163,819 bbls. January 1st and 13,110,709 bbls. on November 30th. Adding the net stocks of the Buckeye and other pipe lines handling Lima oil makes the net stock November 30th 28,011,112 bbls., as compared with 23,709,746 bbls. at the close of December, 1899.

The net stocks of Lima oil held by the Buckeye and Indiana pipe lines at the close of last December amounted to 10,545,927 bbls. and were the lowest on record for 10 years past.

The Lima oil runs averaged 48,477 bbls. in November, which is a decline of 4,848 bbls. a day from the October figures. The Buckeye shipments were 47,355 bbls. a day, a decline of 1,768 bbls. from October. For November the daily runs of the Pennsylvania and Buckeye oil fields averaged 146,715 bbls. and the shipments 152,180 bbls.

Oil Exports.—In the 11 months ending November 31st the exports of mineral oils from the United States were: Crude, 125,295,425 gals.; naphthas, 17,433,875 gals.; illuminating, 672,153,391 gals.; lubricating and paraffin, 63,685,214 gals.; residuum, 18,086,878 gals.; total, 896,654,783 gals., against 885,033,368 gals. in 1899; an increase this year of 11,621,415 gals.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Balliol.—A large force is employed on development work at this mine near Sutter Creek, new levels are being opened up, and a new tramway from the shaft to the mill is being constructed. The Park tunnel is in 130 ft. A new engine is to be installed to run the blowers. W. H. Storms is superintendent.

Keystone.—Another strike has been reported at this mine in Amador City, on the 800-ft. level. The pocket is said to be extensive.

Calaveras County.

(From Our Special Correspondent.)

Black Wonder & Eureka.—These mines, about 8½ miles east from West Point, have been purchased by C. W. Brown, of Canada, for $7,000. The vein is 7 ft. wide, the pay streak carrying gold and silver. The development work consists of a shaft 200 ft. deep and 2 tunnels 180 and 200 ft. respectively, which give 400 ft. of backs.

Emerson.—This mine at Sport Hill has been pumped out and sinking will begin at once under the superintendency of L. K. Mau.

Lloyd.—At this mine on Central Hill, near San Andreas, a large flow of water has caused a shut-down for the time being. This water is supposed to come from the old workings. Pumping machinery of greater capacity than that now in place will be installed and development work resumed as soon as possible. Recently the channel was struck after drifting westerly from the bottom of the 210-ft. shaft. This channel is supposed to be rich, as the adjoining property produced largely years ago. Twelve men are working on 8-hour shifts. Steam power is used for hoisting and pumping.

Poorman.—A new engine is being installed at this mine, 1 mile east from Glencoe, and work will start up on the 400-ft. shaft about January 1st.

Fresno County.

(From Our Special Correspondent.)

Fort Miller Power Company.—Preliminary surveys have been made for a new electric power line to start at a point 22 miles northeast from Fresno, extending through the San Joaquin Valley to San Francisco, by way of Stockton, the total length being 240 miles. The power house will be 22 miles from Fresno. The company owns water rights on the San Joaquin River amounting to 25,000 miners' inches with a fall of 700 ft., enough to generate 40,000 H. P.

Kern County.

(From Our Special Correspondent.)

Big Blue.—This old mine, 1 mile north of Kernville, comprising 11 claims on the Big Blue vein and 7 claims on smaller veins, is to be reopened and a small force is now clearing away the old flume and the debris. A ditch is to be constructed which will be used to develop power for an electric plant. Forty stamps of the old mill are to be put in order.

Nevada County.

(From Our Special Correspondent.)

Golden Gate.—On the 175-ft. level of this mine northeast from Grass Valley, adjoining the Maryland, a 2-ft. ledge of good ore has been struck. This lead is believed to be the extension of the Coe ledge.

Placer County.

(From Our Special Correspondent.)

Azalea.—The tunnel at this drift mine in Blue Canyon is in 2,700 ft. and an upraise is soon to be made to tap the channel. Good pay gravel has been encountered in the same channel below. Six men are working under William Rodgers.

La Trinidad.—A trail is being constructed from this mine, in Sailor's Canyon, 16 miles southeast from Cisco, to intersect the Euchre Bar and Towle Trail, as the old trail to Cisco is often blocked with snow and ice during the winter season. Twenty-five men are employed.

Pioneer.—Work has been resumed on this property with a force of 20 men. The tunnel is being extended to cut the pay shoot at Quartz Canyon, 1 mile northwest of Damascus.

Plumas County.

(From Our Special Correspondent.)

Plumas-Imperial.—Men are constructing a rock debris dam in Slate Creek below this mine and will soon have it finished. A permit to impound debris above this dam has been applied for. The property is near Quincy. C. D. Hazzard, superintendent.

San Diego County.

(From Our Special Correspondent.)

Near Warner's Ranch a rich find has been reported. The ledge, which is 6 in. wide, is said to have been traced 3,000 ft.

Picacho.—It is reported that S. W. Dorsey and associates intend to erect a 1,000-ton cyanide plant at this group of mines on the Colorado River, about 40 miles north from Yuma. A railroad from the mines to the mill on the river is part of the plan.

Sierra County.

(From Our Special Correspondent.)

Several promising gravel claims on Chapparal Hill have been bonded by Adams & La Blond, who are working the property with a force of 10 men to prospect the ground. Water will be obtained by opening up the old Beard Ditch, and laying a pipe line.

Croesus Gold Mining Company.—This company, which is working the Plumbago Mine, 2½ miles south of Alleghany, under the management of M. W. Mather, has declared a dividend of $15,200, making a total of over $100,000 paid to date.

Ruby.—The new stamp mill and gasoline engine has been delivered at the mine at Rock Creek and as soon as the plant is installed the quartz ledge in the old workings will be developed. W. Wolf is superintendent.

Shasta County.

(From Our Special Correspondent.)

Bunker Hill.—This old mine, near Middle Creek Station, which is worked by W. A. Pryor for the owners, has produced some rich ore from near the surface; 300 tons sent to the smelter are said to have realized over $3,500.

Miner's Dream.—The force of men doing the assessment work on this claim, 3½ miles south from Shasta, struck a rich pocket from which $2,000 worth of gold has already been taken. One nugget was worth $250.

Trinity Copper Company.—It is reported that this company has taken over the Shasta King and King Copper group of copper claims in the Flat Creek District, north of Copley, and that a large smelting plant will be erected.

Siskiyou County.

(From Our Special Correspondent.)

Bonanza.—This group of mines in McConaughy Gulch, on Grizzly Creek, 2½ miles north from Hooperville, is being developed under the management of H. Miller. A force of men is running a tunnel to tap the parallel ledges at a depth of 150 ft. Arrangements have been made to work all winter. All the necessary buildings have been erected.

Yuba County.

(From Our Special Correspondent.)

Blue Point.—This placer mine east from Smartsville is being put in shape. A large restraining dam is to be built and machinery for hydraulicking put in. The mill is to be enlarged and general improvements made.

COLORADO.

Clear Creek County.

(From Our Special Correspondent.)

Carpenter Pyritic Smelter.—Prof. F. R. Carpenter has begun preliminary work on the proposed smelter at Golden. It is intended to treat the sulphide ores from Gilpin and Clear Creek Counties and as mines are opened on the South Park it will also be in shape to handle the product from that section. The daily capacity is to be 300 tons per day. Prof. Carpenter expects to have the smelter running by May 1st.

Foxhall Tunneling and Mining Company.—An option has been given to the Alma Mining Company for something over $100.000. The group is on Seaton Mountain near Idaho Springs and in addition to a long tunnel comprises about 8 full claims. The Casino Vein is free gold bearing. G. H. Gottschalk, of Milwaukee, is at the head of the Alma Company.

Griffith.—The west end of this vein, which was owned by Hood & Maxwell at Georgetown, has been sold to a syndicate headed by Hannah P. Tweed, of Denver. The consideration was $60,000. The Griffith is one of the oldest discoveries in the State, having been located in 1859. The ores are gold-bearing sulphides. The same vein is worked to the east by the Annette Company, which driftd into the mountain and opened the vein at a depth of 1,200 ft. below the apex. Some of the best ore has ben found at the increased depth, although smelting ore shoots continue from the surface down.

Lamartine.—The 2 individual owners of this mine are getting patents on 12 more claims, which will bring their holdings up to 40 claims. They have recently installed electricity at the mine and will push development. The 9 levels to the west of the shaft are beyond 1,000 ft. The seventh is almost 2,000 ft. and a number of ore shoots have been opened. The ores average $100 per ton. It is estimated that fully $3,000,000 worth of ores has been opened in these drifts to the west within 18 months.

Salisbury Mining and Milling Company.—At the annual meeting in Idaho Springs the following directors were elected: James T. King and Charles Rannells of Philadelphia, Pa.; J. A. Varney, A. D. Bullis and Kate Bullis, of Idaho Springs; Joshua A. Reeves and I. G. Loeber, of Chicago, Ill., and Milton Powel and Samuel Pogue, of Philadelphia. The option to the Montreal syndicate which secured the Stanley Mine was ratified. The amount was for $150,000, 1-3 of which was paid down some 6 months ago. The Montreal syndicate is already in control of both properties and is operating them jointly.

Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—D. Channing to Eliza Channing, surface ground on Calumet and Obeda lodes; S. Betz to C. Lundwall, ½ interest Revenge No. 2 Lode; J. J. Sams to J. C. Nelson, ½ interest in Logan Lode; J. H. Campbell to F. C. Morris et al. ¾ interest in Carrie Belle Lode; R. L. Stehr to F. C. Bartle, ½ interest in Calvin group of 8 claims; F. H. Cole et al. to F. W. Herbert, Rarus and Andromeda Lodes; J. Fleiss to C. E. Bolander, the Crazy Lode; H. M. Teller to C. Truscott, 3 years' lease on Peck and Thomas Lode; F. W. Herbert to Kathryn Gold Mining and Milling Company, the Rarus, Comet and Andromeda lodes; S. E. Fish et al. to C. J. Fish, the Montana and Mary L. lodes; Dennis Sullivan to H. J. Sears, lease on Bobtail Lode, mineral entry No. 751; S. R. Burdell and C. Anderson to E. P. Beers, 1/3 interest in Rapahannock Lode; C. Groseclose et al. to D. O'Sullivan, the Syndicate and Orphan Boy lodes.

Alpha Gold and Silver Mining Company.—A good strike has been made in the lower levels, assaying 27 oz. gold, 6 oz. silver per ton. The

regular shipments are made. The company intends to sink after New Years. John Grant, Central City, is manager.

British.—A small plant of machinery has been installed on this property, and development work resumed. H. M. Cowell, Central City, is manager.

Chicago Carr Mining Company.—An order has been placed for a 22-H. P. and a 12-H. P. Fairbanks, Morse & Company's gasoline engine for the Chicago-Carr shaft on Bobtail Hill. The shaft is only down 130 ft., but smelting ore is being taken out, running $60 per ton by carload lot, and considerable concentrating ore is being shipped to Idaho Springs. B. M. Myers, Central City, is manager.

Kansas-Burroughs Consolidated Mining Company.—During November this company shipped 231 cars of 1,965 tons, a very large proportion of which was milling ore. The production was curtailed on account of installation of machinery and surface improvements at the Phoenix-Burroughs shaft. P. McCann, Central City, is manager.

Modoc.—Carbis & Company have taken a lease from local owners and are going to install a hoisting plant. They have begun daily shipments to the mills. J. Carbis, Central City, is manager.

Lake County—Leadville.

(From Our Special Correspondent.)

Leadville Ore Production.—Another increase is reported due to the Home Mining Company shipping about 500 tons of all classes of ore per day. The daily production of the district has now reached 2,500 tons.

Cann.—This deep shaft will reach 500 ft. this week, when a station will be cut and drifting done to cut the Nubian shoot. The shaft will be sunk another 50 ft.

Evelyn.—Sinking, which was suspended a short time ago, is resumed and the work is pushed with 3 shifts. The company is going after the extension of the big iron bodies that have been opened up in the Stars and may catch the extension of the Wolftone. Maurice Starne, T. S. Wood and other mining men head the project.

Fryer Hill Gold Mining Company.—This new stock company is to work the Double Decker Mine, which it has leased. The drifts at the 130-ft. level, which showed indications of ore, are to be first explored.

Gunnison.—Shipments are to begin this week from this Sugar Loaf property. The vein operated is 4 to 6 ft. thick. Much of it will average $3 gold and 50 oz. silver to the ton.

Louisville.—The new leasing company, headed by Arthur Nichols, formerly of the Maid & Henriett, is cleaning out the drifts at the 650-ft. level, until recently filled with water. The ground will be blocked out and sub-leased while the leasing company will also carry on work. The shaft is 1,000 ft. deep and there are 300 ft. of water in the bottom of it.

Muldoon Claim.—This shaft of the old Chrysolite property, now being operated by lessees, is shipping from an iron ore shoot of fair grade.

Poverty Flat Mining Company.—While shipments have stopped from the Seeley shaft, development work is still in progress.

Resurrection Gold Mining Company.—Shipments are heavy and the No. 2 shaft will soon be opening up the rich ore shoots from No. 1 shaft. As soon as these are opened up No. 1 shaft is to be sunk another lift of about 50 ft.

Rubie.—The lessees are shipping from the 500-ft. level 20 tons daily of sulphide ore carrying $4 gold, $8 to $120 silver and 40% lead. A 70-ft. drift shows ore 20 ft. high. As soon as better opened shipments will be largely increased. The company has also a rich ore body at 700 ft.

Seneca.—The Hay Trosser Shaft at this claim, which has not been operated for years, is being started up by lessees who are going down to 240 ft. after an ore body located by another shaft.

Tiger.—Lessees have started up this Fryer Hill property, which has long lain idle. In the upper levels there are large bodies of low-grade iron ore exposed which could not be worked in the past owing to high treatment charges.

Toledo Avenue Mining Company.—The new shaft is down 350 ft. and after 50 ft. more drifting will start to explore the contacts above.

Yankee Doodle.—Eighteen feet of good grade iron ore, in addition to the lower grade ore bodies, have been opened. Much development is under way.

San Juan County.

(From Our Special Correspondent.)

Esmeralda.—A sale of this Silverton property is proposed to Colorado Springs parties. Experts are making final examinations. The price agreed upon is $45,000.

Evening Star.—A good lead of gray and yellow copper ore is being developed at this Silverton mine and shipments continue regularly.

Iowa Mining and Milling Company.—The average production is 130 tons daily of concentrating ore, which is reduced at the company's mill near Silverton at the ratio of 4 into 1.

Parnell Group.—A sale is pending on this group, owned by Silverton parties. The sale is promoted by Frank Smith of Ouray.

Teller County—Cripple Creek.

Independence Town and Mining Company.—This company's property at Cripple Creek has been sold to satisfy last year's tax levy of $3,876. Lodes, mineral rights and surface locations in the Hull City placers are assessed at $106,525 and lots in Independence Town at $12,350. For years title to the properties has been disputed by the Wilson Creek Company.

(From Our Special Correspondent.)

Mr. Francis O. De Costa, of New York, visited the Cripple Creek District, Colo., last week. There is difficulty in getting transportation from the mines to the mills on account of a scarcity of cars. The ore bins of the Elkton Consolidated and other properties are full. The Florence & Cripple Creek Railroad has ordered new cars, and when the new railroad is in operation it is thought the ore can be handled without difficulty.

Doctor-Jack Pot Consolidated Gold Mining Company.—This company organized under the laws of Wyoming, is the outcome of a most important consolidation. The claims owned are the Doctor, Jack Pot, Chief, Elizabeth Cooper, Ingham, Mattie D., and Lucky Corner. A number of these claims were involved in such a tangle of litigation that the prospect of ever arriving at a settlement and leaving anything to the stockholders was very slight. Now the mines will be able to begin producing at once. The directors of the new company are: President, A. E. Carleton; vice-president, J. A. Hayes; treasurer, J. H. Hobbs; secretary, F. M. Woods; F. W. Ether will be the assistant secretary and treasurer. The apportionment of stock is as follows: Jack Pot, 875,000 shares; Ingham Company, 375,000 shares; Nugget Company, 300,000 shares; Magnet Rock Company, 25,000 shares; Dock and Chief lessees, and to pay the expense of incorporation and promotion, 875,000 shares; treasury of the company, 100,000 shares. Part of the 875,000 shares and funds realized from the sale of the remaining 450,000 shares went to the owners of the Doctor and Chief claims. The Jack Pot, Nugget, and Ingham companies will retain their organizations. The Nugget has declared a dividend and it is likely that the Ingham and Jack Pot will. F. M. Woods is general manager. Work will be carried on through the Morning Glory shaft.

Isabella Gold Mining Company.—This company has just declared its regular quarterly dividend of 1c. per share. It was thought by some that the dividend might be passed.

Magna Charta Gold Mining Company.—The fact has just come to light that the property of this company, which is worth about $100,000, was sold some 6 years ago for delinquent taxes for $8.61, and the deed finally delivered to another company. The directors supposed the taxes had been paid, and are quite confident that they will be able to regain the property.

Portland Gold Mining Company.—The suit between this company and the Strong Gold Mining Company has been compromised by the Portland taking 325 ft. of the Strong Vein, and that portion of the Strong Claim lying north of the north end line of the Black Diamond. This company has always pursued the policy of compromising litigation whenever possible, and has thus saved large expense.

IDAHO.

Ada County.

E. H. Levy, the Boise assayer, is about to install a complete sampling plant and a small smelter, 2-stamp mill, chlorination and cyanide plant at Boise. The plant will have concentrating tables, amalgamating pans and other devices.

Blaine County.

Hattie.—The new 20-stamp mill for this group, Hailey, Superintendent Black, is expected to be on the ground January 1st.

Boise County.

Confederate.—Work has begun on this mine at Quartzburg, adjoining the Gold Hill, owned by Robert Grayson, of San Francisco. It was worked to the 250-ft. level some years ago, but operations now are not so deep, owing to water. It is understood that Harry L. Woodburn, assistant manager for the War Eagle Company, has a bond on the property.

Don Carlos.—This newly opened property at Mineral Hill shows a body of ore 467 ft. thick. The ore carries free gold and heavy sulphurets. A 5-stamp mill is busy.

Last Chance.—This mill at Quartzburg is running steadily.

Little Sammy.—E. F. Fitzhugh is interested in this claim at Idaho City which was located 11 years ago, but has not been developed. Mr. Fitzhugh has had a 3-stamp mill at work since last spring, which is reported to show a neat profit.

Owyhee County.

Pauper Mining Company.—At a meeting last week Fred R. Reed was chosen president and general manager; J. I. Crutcher, vice-president; E. K. McKenzie, secretary; John L. Kemmerer, treasurer. The old board of directors was re-elected. It was decided to begin active work on the Pauper Mine at Silver City on January 1st, with John Russell as superintendent. There is a tunnel some 1,400 ft. long, tapping the vein at 400 ft. of depth, while a shaft is now down 525 ft. On the second and third levels there was considerable work done in the early days, and the property has been a considerable producer of rich ore. The shaft is to be put to 700 ft. this winter, and on this level the company will drift south on the vein till beneath the crest of the hill. Very little stoping has been done.

Shoshone County.

Since December 1st a new system of employing laborers of all grades has been in effect at the leading mines of the Coeur d'Alenes, which it is claimed is a convenience to both the employer and employees. Instead of being hired at the different mines as heretofore, the men are hired by an agent in Wallace, acting as an employment agent. George T. Edminston, who has been the State's agent in the issuance of permits, is the employment agent chosen. The Morning Mining Company, Larson & Greenough, lessees of the You Like Mine, the Buffalo Hump Mining Company for its Tiger-Poorman branch, the Standard Mining Company, Frisco Consolidated Mining Company, Hecla Mining Company, Mammoth Mining Company and Belle Mining Company are the companies in the compact.

ILLINOIS.

Macoupin County.

Illinois Missouri Coal Company.—Six hundred employees of the Illinois Missouri Coal Company about Belleville were called out this week by District President Hefti, of the United Mine Workers. The company has been irregular in paying its men, it is said, and claims of a grievance on the scale are also made.

Vermillion County.

(From Our Special Correspondent.)

Federal Iron and Steel Company.—This company, Phil Finney general superintendent, is building storage bins and putting in an elevator at the coal mine at Springfield.

Jones & Adams Company.—This company is placing the second motion hoisting engines at the Empire Mine at Springfield with first motion engines made by the Danville Foundry and Machine Works, Danville, Ill. J. S. Jones, Chicago, Ill., is president, and Edward H. Coxe, of Springfield, is general superintendent.

MICHIGAN.

Copper—Houghton County.

Calumet & Hecla.—A steam shovel, since replaced by 2 steam derricks, and nearly 200 men have been at work in removing the coal from this company's coal pile which had taken fire. The fire was nearly in the center of the big pile, and the plan was to cut out the burning coal. Water was kept flowing steadily, so that it was only a question of time when the blaze would be drowned out, or rather die out through lack of fuel. The gas, however, made the work very unpleasant, if not dangerous. The last mishap of the kind occurred 2 years ago, when a pile of coal, consisting of 35,000 tons, burned 2 weeks before going out. This company will increase the wages of its employees 2½%, beginning January 1st. A year ago last March the company raised wages 10% and the increase has been in force since. For 4 years the men working for the company has not paid a cent into the Employees' Aid Fund, the surplus in the fund and the dividends from the stock in which the fund is invested paying all running expenses, but, however, after January 1st payments will be charged up again. This amounts to $1.30 for married men and 80c. for single men each month. The only shaft now in operation on the amygdaloid vein is No. 15. Operations at No. 14 have been suspended to permit repairs to crushing machinery.

Elm River.—The shaft on the lode recently discovered is down about 100 ft.

Old Colony.—Work at this property is confined to the tunnel, which is in about 2,000 ft. Two Erie tube boilers capable of carrying 80 lbs. steam each, a 4-drill Rand compressor, and 2 Worthington pumps are erected and 2 Sullivan drills are in use. About 1,250 ft. in the tunnel a winze is being sunk. It is now down 65 ft. Twenty-five men are employed.

Osceola Consolidated.—No. 2 shaft at the Tamarack Junior branch is out of commission for a few days because of an accident to the hoisting engine.

Rhode Island.—No. 1 shaft is now 300 ft. deep.

Three drills are used in drifting and 1 in sinking. No. 2 shaft is about 200 ft. deep. No sinking is being done. Three drills are used in drifting.

Tecumseh.—No. 1 shaft is being kept unwatered, while sinking is in progress at No. 2 shaft.

Wolverine.—The Osceola Consolidated has sold a portion of the s w ¼ of Section 6, T. 56, R. 32, to this company. The revenue stamps attached to the deed indicate a price of $13,500. The mineral rights alone, reaching to within 15 ft. of the surface, are conveyed.

Copper—Keweenaw County.

(From Our Special Correspondent.)

Mohawk.—The St. Mary's Canal Mineral Land Company has sold the right of way for a railroad over the n w ¼ of Section 2 and the n ½ of Section 3, T. 56, R. 52, to this company. The mineral rights are not included.

Copper—Ontonagon County.

Duluth, South Shore & Atlantic Railroad.—The Mineral Range extension of the Duluth, South Shore & Atlantic is completed. It is 40 miles long and has been a heavy piece of railway construction. More than 1,000,000 yds. of earth and rock were moved and 4,000,000 ft. of timber was used in bridges. The line runs from Newton and connects with the old line near the Mass Mine. This mine has made a contract with the road for handling its rock. The road reduces the distance from Duluth to the copper country by 50 miles.

Hallowell.—Work at this property has been suspended.. The copper is in the sandstone and very fine grained. B. Schatzinger, president, and C. W. Voth, secretary, are of Cleveland, O.

Mass Consolidated.—Thos. F. Cole, general manager, has resigned and will hereafter be director only.

Porcupine Copper Company.—A deed has been filed transferring all the mineral rights of the Carp Lake Company to this new company, which has been organized in Cleveland. The lands transferred are the s e ¼ of Section 15, s ½ of Section 14, and the n e ¼ of the n w ¼ of Section 23, all in T. 51, R. 43, also a number of lots on the shore of Lake Superior for a stamp mill site. The Carp Lake company was organized in 1858, but work stopped in 1862. Last spring Messrs. Warren and Payne, with a small force, did some work and some copper-bearing rock was sent East. The lode which crosses the property is sandstone and conglomerate.

Iron—Marquette Range.

(From Our Special Correspondent.)

The 1900 productions of some of the mines of this range have been as follows: Lake Angeline, 389,128 tons; Champion, 113,743; Republic, 130,-126; Princeton, 75,038; Winthrop, 148.345; Beaufort, 1,582; Imperial and Webster, 86,000.

Iron—Menominee Range.

Dr. Nelson P. Hulst, general manager of the Oliver Mining Company, has closed a deal with the Menominee River Lumber Company and the Hamilton & Merryman Company for opening a new iron mine near Waucedah Lake in Waucedah, Dickinson County. He obtained an option from the Marinette concerns.

Gibbs.—A. L. Flewelling, of Crystal Falls, has a crew at work on these lands 3 miles north of Amasa.

Gibson.—The shaft at this exploration south of Amasa is stopped, after having been sunk 100 ft. by the Oliver Company. Ore has been shown by a long row of pits.

(From Our Special Correspondent.)

Chapin Mining Company.—This mine has shipped from dock the present year 925,565 tons of ore, a decrease from the preceding year of about 15,000 tons. There were actually mined and hoisted to surface during the year the enormous total of 1,012,000 tons, which probably puts the Chapin at the head of all underground mines in the Lake Region for this or any other year. The record production of Norrie in 1892 was from not only that mine, but from East Norrie and Pabst also, and was in all 1,098,500 tons. Chapin has been much troubled by water.

Productions of several of the important Menominee mines for the year have been as follows: Aragon, 404,647 tons; Bristol, 51,635; Cuff, 31,-328; Clifford (Traders), 119,940; Commonwealth, 53,964; Loretto, 61,100; Penn Group, 196,548; Hillton, 2,678.

MINNESOTA.

(From Our Special Correspondent.)

The hearing of the case against the Duluth, Missabe & Northern Road, as to ore freights, has closed. The State commission decided that the non-attendance of the attorneys of the road at a certain hour, though their stenographer was there with papers, was equivalent to a withdrawal and closed the case, reserving the right to order a reduction in rates if it saw fit. The commission has been acting both as prosecutor and judge, with a most evident bias during the entire hearing. The road was not given time to prepare its case, which, under a decision of the Minnesota Supreme Court, would include a statement as to the cost of duplicating the road in its present condition. To secure such evidence takes time. This commission has been in office 2 years, but did nothing at attempting reductions in rates or in hearing as to the reasonableness of the present rates, until after the commission's party had been beaten for re-election, and when less than 2 months remained for the hearing of the entire case. Then the commission secretly ordered a hearing and attempted to keep all knowledge of its action from the newspapers. The commission has given it out that its object is to reduce the ore rates by 20c. a ton, making a difference of about $2,000,000 on a business equal to that of 1900.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Auburn.—This mine will be extended this winter by a deeper level. The steam shovel now in the bottom of the 125-ft. pit will be lowered and mining will proceed by shovel at the depth of 180 ft.

While explorations are very much less active than a year ago, there is considerable doing and the price of drill work per foot has not greatly declined. All the drill contractors are fairly busy.

The Duluth & Iron Range road is surveying lines west to the new village of Buhl, which will bring it within a few miles of the most westerly part of the range. It may build there soon.

Biwabik.—Stripping has stopped for the winter on account of the depth of frost. There have been 4 shovels at work since summer, employing about 400 men; prior to that a fifth was in use. There never was so much dirt moved at the mine as this year, amounting to considerably over 1,200,000 cu. yd. Most of this has been wasted on a dump half a mile west of the mine on a tract of ground secured for the purpose. This tract is now covered 40 ft. deep with a pile of dirt 1,600 ft. long and nearly 500 ft. wide on the average. The Drake & Stratton Company, the contractors, have moved nearly all the 3,-000,000 yd. of stripping since the mine was opeend. The stripping is now closed to the line of the Cincinnati Mine on the southeast, but a wide area on the north of the present open mine is not touched. This will probably be stripped during the next year or so. With further operations the eastern outlet to the mine will be abandoned, and the high bank of ore on which trains run out will be mined. The mine is expected to ship more than 1,000,000 tons next year. The National Steel Company owns ¼ interest, and various Mahoning Valley concerns, Tod, Stambaugh & Company and others, the remainder.

Cole & McDonald have started diamond drill work at Mesaba Station for the Oliver Iron Mining Company. Several drills will be put in and a large number of holes sunk. The Minnesota Iron Company has also a number of drills at the same locality and will push explorations there the present winter.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—There was a heavy output of both zinc and lead ore last week, but the shipments were smaller than the previous week on account of the inability of the ore buyers to secure enough cars and a large amount of ore will not be loaded until next week. Buyers did not make any general advance, but in some special cases paid from 50c. to $1 per ton more. The top price was $29.50 per ton for the ore from the Perkins Mining Company, on Lead Hill, at Belleville. The Independence ore sold at $29 per ton, but most of it was not loaded. The ore from the Marion Mines on the Continental Zinc and Smelting Company's land at Joplin also sold at $29. Outside of these 3 lots the highest price paid was $28.50, at which the bulk of the Oronogo ore was sold and the balance of the district output was sold according to grade. Following is the turn-in by camps of the Joplin District for the week ending December 15th:

	Zinc lbs.	Lead lbs.	Value.
Joplin	2,036,750	531,230	$40,733
Galena-Empire	1,554,900	174,050	23,439
Oronogo	783,460	17,390	10,947
Carterville	1,674,970	325,920	29,271
Ash Grove	.....	40,000	880
Aurora	860,640	21,240	9,449
Webb City	364,500	36,570	5,580
Duenweg	82,260	46,140	1,966
Belleville	534,270	1,970	7,525
Central City	297,830	18,670	4,153
Spurgeon	181,870	67,920	3,496
South Jackson	121,960	7,650	1,701
Cave Springs	64,530	3,500	925
Stotts City	87,500	.....	1,243
Carl Junction	177,700	.....	2,399
Neck City	140,900	.....	2,008
Alba	104,930	.....	1,364
Spring City	43,150	33,720	1,260
Granby	389,000	35,000	4,500
Total	9,499,320	1,360,970	$153,239
Total, 50 weeks	467,712,210	56,375,770	$7,705,471

During the corresponding week last year, the highest price paid for zinc ore was $35 per ton, while lead sold at $27 per 1,000 lbs. The lead sales were less than last week by 513,450 lbs., the zinc sales greater by 175,610 lbs., and the value greater by $23,063. For the corresponding 50 weeks last year the lead sales were less by 11,-212,580 lbs., the zinc sales greater by 23,843,740 lbs., and the value greater by $2,760,094. As compared with the previous week, the sales were less by 1,030,320 lbs. of zinc and 35,500 lbs. of lead and the value was less by $15,085.

Great Gobbler Mine.—This mine and 440-acre lease at Wentworth has been sold to Frank Rockefeller by Henry Gross, the late owner, for $250,000 cash. The mine has the greatest body of high-grade ore in the district and the lease runs until 1910. The new owner takes possession of the property at once. He has purchased a large amount of zinc mining property in this district during the past year, most of the deals having been made by R. K. Pitkin, of Joplin, but this is the largest transfer of mining property for cash during 1899.

New Lanyon Smelter.—The Lanyon Zinc Company, which already operates 3 gas smelters in Allen County, Kan., will begin the erection of a fourth smelter at once. The company owns 40,000 acres of land and is now having its old No. 3 smelter erected in 1872 at Pittsburg, Kan., torn down; all the others will follow and such of the material as can be used in the new works at Iola will be shipped there. The removal of the smelters from Pittsburg and Nevada will be a big loss to the business interests of those towns.

United Zinc Companies.—The new National Mill, which was erected partly for a custom mill to clean ore for the sub-lessees, has started and made 35 tons of ore the first week running single shifts.

MONTANA.

Beaverhead County.

Revenue. — Alexander Livingston recently leased the Revenue Mill at Jardine for 3 months from E. B. Weirick, of Butte. Mr. Livingston has an option on the plant, the purchase price to be $50,000. He has put 25 men to work. D. A. Buchanan, of Tacoma, is getting the mill in order and James Hall will be mine superintendent.

Polaris.—The Butte men who at present control this property have 15 miners at work. More men will be put on about January 1st, it is said, when ore hauling will be resumed. A 60-horse freight outfit has been secured. When the upraise now being driven from the end of the long tunnel to connect with the upper workings is completed, which will require about 40 days, it will expose about 700 ft. of virgin ground on the ledge.

Flathead County.

Minnie W.—James Ford has purchased an interest of George Robinson in the 7 claims of this group. Mr. Ford has just finished up a 100-ft. contract for tunnel work on the properties in the West Fisher district. It is a free milling quartz proposition and a stamp mill will be built next season. They are situated on Mill Creek adjoining the American Kootenai Mining and Milling Company's properties. James Harris, of Libby, also owns a ¼ interest in the claims and Mr. Robinson owns the balance.

Granite County.

Shamrock.—This mine at Garnet is now controlled by Martin Buckley, of Garnet, and Patrick Mullins, of Butte. They recently purchased a half interest and bonded the other half for $20,000. The property adjoins the Nancy Hanks. The shaft is down 360 ft. in a peckety vein which is very rich in spots. Sixteen men are busy. Shipments to the East Helena Smelter are expected to be one car of ore per week. The vein is 2½ to 12 ft. wide.

(From Our Special Correspondent.)

Leasers are shipping steadily ore from the upper workings of the Lead King, from the Crescent, from the Fair View to the Montana-Denver Reduction Works at Beartown. The latter plant is making a test on 120 tons of ore of the porphyry dyke of the Fourth of July. Mitchell & Mussigbrod own the claims.

Jefferson County.

Garnet.—This mill was closed down last week on account of lack of water. The miners are all laid off and sinking suspended. Since the hoist was put in a shaft has put down about 97 ft. The ore body is about 8 ft. wide. On account of being obliged to close the mill the mine is also closed for the reason.

Madison County.

Bowery.—Glass Brothers, of Basin, are running the 10-stamp mill at this old property situated near Silver Star.

Clipper-Boss Tweed.—The miners at this group of claims at Sheridan have been laid off.

Lake Shore.—Nearly all the machinery for the mill has been delivered, with the exception of 2 car-loads now being freighted from Twin Bridges to the mine. The large boiler for operating the

air compressors has been delivered and the drills will soon be in operation.

Red Chief Mining Company.—The new 50-ton concentrator being built by this company, which is operating the Waterlode and Red Chief mines at Red Bluff, is completed.. The company has done a great amount of development work, and it is reported that they have struck excellent bodies of rich ore in the Waterlode claim. It is reported that they have 700 tons of concentrating ore on the dump of the Red Chief and nearly as many on the dump of the Waterlode.

Sunbeam.—A good strike of gold ore at this mine on Indian Creek, leased by Moore & Gibbons, is reported.

Watseka Mining Company.—It is reported on good authority that the company at Rochester is about to start sinking a new shaft, besides equipping the mine and mill with electric lights. From this property there has been shipped for the past 6 months from 60 to 70 cars of high-grade ore each month. E. D. Merritt, who has been with the company, has branched out for himself and has secured a lease and bond on the old Shoemaker Mine, located in the same district.

OREGON.

Josephine County.

Jilson.—This mine is working 60 men, and the mill is running regularly. The monthly clean-up is said to be $17,000 to $18,000.

La Flesh.—This mine is being developed and ore bodies blocked out to determine if the mine warrants a larger milling plant.

Needham.—This claim on the Jilson vein is owned by a Michigan company. A strike has been made of rich quartz 18 to 20 in. wide, carrying heavy gold, at the end of the 400-ft. adit. The same company is sinking on a copper prospect near the Jilson Blue Gravel.

PENNSYLVANIA.

Anthracite Coal.

The Kingston strike was adjusted December 19th.

Over 500 laborers employed at the Excelsior and Corbin collieries near Shamokin by A. D. Robertson & Company went out on strike because the miners under whom they work refused to grant the 16% increase which was promised to all at the settlement of the big strike. The collieries are tied up completely. No signs of violence.

Delaware.—At this shaft of the Delaware & Hudson Company a bad mine fire is raging.

Elkhill Coal and Iron Company.—According to a dispatch from Scranton, the 7 collieries recently secured as feeders to the Ontario & Western Railroad Company's coal department have been consolidated into one company under the name. These companies, with their location and price, are: Johnson Company, Dickson City, $2,100,000; Mount Pleasant Coal Company, Scranton, $665,000; New York & Scranton Coal Company, Peckville, $485,000; West Bridge Coal Company, Scranton, $410,000; Blue Ridge Coal Company, Peckville, $118,500; Forest Mining Company, Archibald, $600,000; Raymond Coal Company, Archibald, $400,000; total, $4,778,500. The Johnson and New York & Scranton companies each has 2 collieries. The others have 1 apiece. The Elkhill Company itself operated 2 collieries. This makes 11 collieries that will now be operated by the Elkhill, with a capacity of 2,000,000 tons annually. The Scranton Coal Company and the Pancoast Coal Company, owned by the firm of Dickson & Eddy, coal agents for the Ontario & Western, will, it is said, eventually come into the expanded Elkhill Company. All the small mortgages drawing 6% with which the several companies were burdened have been taken up and paid off from $3,500,000 advanced by the Morton Trust Company, of New York, which takes a 5% 15-year first mortgage on all the properties as security. The money has been turned over in New York to F. E. Platt, president and treasurer of the Eilkhill Company. The deeds to the Elkhill and the $3,500,000 mortgage to the Morton Trust Company are recorded. The revenue stamps affixed to the various papers cost $7,849. The Ontario & Western Company is negotiating for a number of other collieries, among them those of Jermyn & Company, at Old Forge, and the Green Ridge Coal Company's slope in Scranton.

Kingston Coal Company.—Fourteen hundred of the 1,900 miners of this company went on strike December 17th. This is the biggest strike since the general strike of September and October, and it is liable to be followed by others at nearby collieries. Four of the 5 collieries of the company are idle. The grievances were submitted to Manager Edwards, but were all refused, except the granting of semi-monthly pay and the employment of a check weigh boss. The others are a demand for the discharge of Foreman Thomas Morgan and a new "topping" rule requiring only 6 in. at the breaker instead of 9.

Lehigh & Wilkes-Barre Coal Company.—The miners at this company's No. 5 shaft at Wilkes-Barre are on strike, and the breaker boys at the Maxwell shaft have struck.

Natalie.—The men at this colliery, near Shamokin, went out on a strike this week which lasted but a few days.

Negotiations have been completed between W. W. Jackson, trustee for the estate of George D. Jackson, deceased, of Dushore, and M. J. and A. J. Murray, of Dushore, and P. H. Mongan, of Scranton, whereby the latter become the lessees of several hundred acres of valuable coal lands in Sullivan County. They will build a breaker near Bernice with a capacity of 1,000 tons a day of prepared sizes, and will put in a complete mining plant.

Oak Hill.—The 500 employees of Leisenring & Company's Oak Hill colliery at Duncott, between Mine Hill Gap and Minersville, went out on strike last week, alleging a number of grievances, the principal grievance being the action of the company in refusing to give them 9 hours' time for 7 hours work on Saturday, as is the custom at other collieries in the region.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Copper Butte Company.—This company has purchased all the interests in the copper claims on Spring Creek, owned by W. A. Nelson, of Custer. The company is stripping off a ledge of copper pyrites, said to be over 100 ft. wide. W. H.. Buffum, of New York, is president.

Paint Factory.—The paint mill in Custer, which has been making about 20 tons of pigment for several weeks, is to be enlarged. The pigment is shipped to the company's mixing works at Akron, O.

Lawrence County.

(From Our Special Correspondent.)

Boston & South Dakota.—This company, of Boston, owning the Minerva and other mines in Blacktail Gulch, has decided to erect a 150-ton cyanide plant at the old stamp mill at the mine. Tests have been made on the cement ore, which have been successful.

Homestake Company.—The Ellison hoist is being finished up as rapidly as possible. A new engine for the crusher is being placed, which practically finishes the machinery placement.. The shaft at this hoist has been sunk 600 ft. deep. The company started up most of the stamps in the Caledonia Mill at Terraville this week. The DeSmet Mill will start the first of the year. The company is arranging to put in a system of compressed air engines to haul ore from the mines to the mills, which will do away with steam.

Pennington County.

(From Our Special Correspondent.)

Chilkoot.—At the depth of 185 ft. a rich strike of free gold has been made. John Barth and associates, of Milwaukee, have the mine bonded. It is on the Keystone belt.

Holy Terror Company.—On the 800 and 900-ft. levels, in the Holy Terror Mine, headers are being driven. Ore is being broken for 15 stamps.

Wood Tin.—The New York Chemical and Refining Company has purchased this lode of Lewis Every for $6,000. The mine is located 3 miles east of Keystone and will be worked for spodumene. The rock will be shipped to New York.

UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending December 15th there were sent forward from the several smelteries 27 cars, or 1,125,276 lbs., lead-silver bullion; 5 cars, or 247,964 lbs., copper bullion. For the same week the ore and concentrate products shipped from the different camps to smelteries outside the State for treatment, aggregated 75 cars, or 3,167,320 lbs. Copper shipments hold up fully a third more than a year ago, allowing for the greater copper content in the ore shipped out of the State for treatment.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week ending Friday, December 14th the shipments from the 3 rail points of the district embraced 103 cars of ore, 13 cars of concentrates and 1 bar of bullion, which were consigned from the following mines: Centennial-Eureka, 33 cars of ore: Mammoth, 17 cars ore, 13 cars concentrates and 1 bar bullion; Gemini, 17 cars ore; Carissa, 8 cars; Grand Central, 6 cars; Tesora, 6 cars; Swansea, 5 cars; Star Consolidated, 4 cars; May Day, 3 cars; Godiva, 2 cars; Ajax, 1 car; Hamburg, 1 car.

Centennial-Eureka.—The main ore body is cut on the 1,000-level, showing good values. Since negotiations for operating the Eureka Hill Mill fell through Richard D. Parker, the company's consulting mining engineer, has examined the Eureka Hill Mine, and it is said purchase negotiations are on foot.

Yankee Consolidated.—At meeting of directors on December 15th Dr. P. A. H. Franklin qualified as president-manager. A clean sweep of heads at the mine followed, Richard Guenther being placed in charge.

Summit County.

(From Our Special Correspondent.)

Park City Shipments.—In the week ending December 15th the total smelter products marketed through the Mackintosh sampler, which represents the output of the camp, was 1,953,120 lbs., which was made up as follows: Daly-West, crude, 810,350 lbs.; concentrates, 372,480 lbs.; Anchor, concentrates, 409,430 lbs.; Silver King, crude, 372,480 lbs. For November the shipments aggregated 12,421,640 lbs., contributed by Silver King, crude 3,894,310 lbs., concentrates 1,024,410 lbs.; Daly-West, crude 2,272,170 lbs.; concentrates 2,284,980 lbs.; Ontario, crude 819,120 lbs.; Anchor concentrates 794,430 lbs.; Loring Brothers, concentrates, 225,560 lbs.; California, concentrates 26,500 lbs.; Barnes, concentrates 50,020 lbs.; Quinn, concentrates 49,840 lbs.

Tooele County.

(From Our Special Correspondent.)

Chloride Point.—A surprise was the appointing of Manager Duncan as receiver, necessitated to prevent the property falling into the hands of creditors. There is a considerable debt, exploration the past year has proved disappointing and the future is problematical.

Geyser-Marion.—It is said the committee on reorganization has cleared up the company's debts, the largest creditors making up the needed balance.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

Chico.—This mine, on a south extension of the Republic vein, has a vertical shaft sunk through porphyritic conglomerate to 200 ft., whence a crosscut intersected the 25-ft. vein; the shaft was continued to 317 ft., striking the footwall at 302 ft., where a drift was run southward on the vein and then continued along the footwall to a total distance of about 170 ft. No pay ore in milling quantity was discovered. Only occasional samples assayed well. December 1st a drift north on the vein ran and pay ore on the footwall 3 ft. 10 in. wide, samples from which go as high as $30 per ton, carrying 6 oz. silver to 1 of gold.

Mountain Lion.—Sinking the main shaft from the 400-ft. level started December 1st. The mill is closed down for the present. A small force of men is employed on development.

Quilp.—The vein is opened on Nos. 1, 2 and 3 levels, not being the adit level where is the main station with steam hoist and a suction fan for ventilation. A winze is sunk below No. 1 level 285 ft. and is expected to answer until the company sinks a permanent shaft from surface.. On the No. 2 level, 100 ft. below the adit, the southeast drift, at 93 ft., has cut 2 ft. of good milling ore and several quartz stringers. On No. 3 level 210 ft. below the adit is a station with a No. 9 Knowles pump, which lifts all the water to the adit.. A crosscut shows the vein about 12 ft. wide. A platform, ore shoot and timber slide have been built for a raise to the No. 2 level. The quartz is banded and averages about $40 per ton. The average value of the ore all through the mine is given at about $13 per ton in gold and silver in the proportion 1 oz. of the former to 4 oz. of the latter. At present 10 men are employed on development.

Tom Thumb.—No. 1 shaft was sunk through a quartz vein and continued to 50 ft., where a crosscut was driven 52 ft., which proved the vein 12 ft. wide. Drifts were run on the vein 60 ft. No. 2 shaft, 140 ft. east of the No. 1, was sunk 100 to the footwall, and a drift driven 100 ft. south on the vein in payable ore. At 45 ft. in the vein was crosscut and proved 11 ft. wide. This shaft was sunk to 150 ft. and a crosscut driven to the vein. A drift runs southwest 160 ft. and another one northeast of 40 ft. all in pay ore 11 ft. to 4 or 5 ft. wide. In the workings from No. 1 shaft the ore averaged about $12 per ton, in the proportion of 8 oz. silver to 1 oz. of gold. In the workings from the No. 2 shaft the ore averaged about $17 per ton, with silver and gold in the same proportion.

No. 3 shaft is about 300 ft. east of No. 2. It has two 4 by 5 compartment, timbered with 10 by 10 square sets. At a depth of 260 ft. it passed through a quartz vein 10 to 12 ft. wide, which assayed from $4 to $80 per ton. A 170-ft. crosscut struck the west vein at about 100 ft. in, an upraise on which goes to the 150-ft. lead of the No. 2 shaft workings. The pay shoot on the 260-ft. level is 12 ft. wide and drifts are run 20 ft. on it from each side of the crosscut. The shaft was sunk to 300 ft., when work was suspended.

The mine is equipped with a whim and hoist house at the No. 2 shaft and other buildings. At No. 3 shaft the equipment comprises 2 Atlas boilers (a 60 and a 40-H. P.), a Joshua Hendy 8½ by 10-in. link motion 35-H. P. engine; a Leyner 8-drill compressor and 3 Leyner drills and a blacksmith shop. The machinery is well housed, but the shaft is uncovered. At present

but one man is required at the mine to run the pump.

WEST VIRGINIA.

W. H. C. Curtis, of West Liberty, it is stated, acting for an Eastern syndicate, has secured options on several thousand acres of land on the edge of the Garner pool. The new territory embraces almost half of Wetzel County and 8,000 acres in Marshall County.

The same company has been securing coal rights in Marshall County and has completed a block of 25,000 acres. This cleans up all the good coal territory from the Pennsylvania State line to the Ohio River below New Martinsville. It is estimated that over 150,000 acres have been leased for coal purposes within the past 3 months in this territory.

Flemington Coal and Coke Company.—At a meeting of the directors this week several important changes were made in the personnel of the company. Joseph T. Redding, president, tendered his resignation, as did also S. S. Simpson, vice-president and general manager. In their places George Clinton Gardner was elected president and general manager. Mr. Gardner was until recently in charge of the coal department of the Pennsylvania Railroad. The significance of the changes is said to be that Mr. J. B. Haggin, former partner of the late Marcus Daly, now has practically full control of the company. It is reported that Mr. Haggin has recently put a large amount of capital into the business. The treasurer, H. E. Moller, and the secretary, R. E. Leavitt, continue in their positions. Mr. Moller was formerly assistant secretary of the Anaconda Mining Company before it passed under the control of the Amalgamated Copper Company. The company is figuring on some large European contracts.

New River & Kanawha Coal Company.—Nearly all the mines in the New River and Kanawha coal districts along the line of the Chesapeake & Ohio Railway have been joined under the name of this company, with a subscribed capital of $200,000. The company will be a coal sales agency, controlled by and operating for the mine owners subscribing for its stock. The subscribers include all of the operators in the New River District except W. P. Rend, Macdonald Colliery Company, Sugar Creek Coal and Coke Company and the Beury interests, and all of the Kanawha interests except Mt. Carbon, Winifrede and Belmont Companies. All these plants are located on the Chesapeake & Ohio Railway, and their output constitutes practically the entire coal tonnage of that road, except that controlled by its own coal companies. It is said that the total output controlled by the company will exceed 4,000,000 tons, besides 1,000,000 tons of coke.

The officers are: J. Frederick Effinger, president; M. T. Davis, vice-president; J. R. Seal, secretary. Practically all the powers of the institution are vested in a Board of Control, which consists of 2 of the 16 directors and the president. Messrs. M. T. Davis and Justus Collins, both of Charleston, have been appointed members of the Board of Control. The main office will be established in New York about January 1st. So far as known neither the Vanderbilts nor the Pennsylvania Railroad are concerned.

Another feature considered in organizing the new company is said to be that the car supply will be materially simplified by the railroads being obliged to consult with one individual when dstributing cars to the various plants. Better regulation of the supply to the mines and quicker service to the customer in filling contracts are expected. The concerns that will be directly affected by this move are the Chesapeake & Ohio Coal Agency Company and the Chesapeake & Ohio Coal and Company, which now control the output of mines that after April 1st will be under the management of the new organization.

WYOMING.

Carbon County.

(From Our Special Correspondent.)

Dewey.—This claim is located about 10 miles south of the Cumberland Group, but in the open mesa country about 3 miles west of the foot hills. The mine is equipped with boiler, engine, hoist and sinking pump. The inclined shaft has been sunk 180 ft. and some drifting done. The vein is large and well-defined and the ore at bottom of shaft is of better grade than near the surface. An attempt is being made to combine the different interests in one ownership. If successful, work will be resumed.

Greyhawk.—Wm. Rudolph recently located this claim on Big Grassy Creek. At 13 ft. a vein of copper ore nearly 4 ft. wide running $12 in gold is cut. This prospector's locations are mainly in the Big Creek region, about the line between Wyoming and Colorado and not far from Pearl, Colo. One of these is the Bonanza, about 1½ miles northwest of Pearl, which is owned by a company capitalized at $1,000,000. The company is working 14 men in 2 shifts. The vein is large. At about 70 ft. the values are said to be $17, in copper, silver and gold. Another location, the Wagner-Green Group of 6 claims, is about 3 miles northeast of Pearl on Big Creek and is owned by the Wagner-Green Milling and Mining Company, capitalized at $1,000,000. It has a 4-ft. vein carrying gold, silver, copper and lead, and runs from 18 to 24% in copper.

FOREIGN MINING NEWS.

CANADA.

British Columbia—Vancouver Island.

(From Our Special Correspondent.)

Monitor Copper Mining Company.—The aerial tramway on the property of this company on the Alberni Canal has been completed. The first shipment of 566 tons of ore to the Tacoma Smelter was made on December 15th. The headquarters of the company are in New York City. G. W. Maynard is president.

MEXICO.

Chihuahua.

Rosario Mining Company.—W. A. Clark, of Montana, has, it is reported, completed the purchase of the mining property offered by this company of Fort Worth, Tex., for $800,000. The mines are gold and silver producers, and have been worked since 1835.

Sonora.

Cobre Grande Copper Company.—At a conference at Tucson, Ariz., last week the Cobre Grande Mine controversy was settled. The litigation has occupied the highest courts of Mexico, Arizona and Texas for 2 years. The W. C. Greene faction will, it is said, now take up the Cobre Grande stock at par, $2.50. The number of shares included in the agreement is 112,000. Other shares on the outside are to be taken up at the same figure. These shares were sold at prices ranging from 10c. to $5. Many are held in the East. The Greene faction will pay the cost of litigation. The litigation arose through Greene making a transfer of the property involved to the Cobre Grande Company and afterward making another transfer to the Greene Consolidated Company.

SLATE TRADE REVIEW.

New York. Dec. 21.

The list of prices per square for No. 1 slate standard brand f. o. b. at quarries in car-load lots, is given below:

Size, nches	Monson or Br'nville.	Bangor.	Bangor Ribbon.	Alb'n, or Jackson Bangor.	Chap'n Key's'ne	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
14 x 14	6.50	3.50	3.00	3.00	.	5.10	2.90	.	.....
24 x 12	6.60	3.50	3.00	3.00	3.80	5.25	2.90	3.75	.....
22 x 12	6.60	3.50	3.25	3.00	... .	5.25	2.90	3.75	.....
22 x 11	6.50	3.75	3.25	3.00	4.00	5.25	2.90	4.00	.....
20 x 12	6 90	3.75	.....	3 00	... .	5.25	2.90	3.75	.....
20 x 11	6.80	.....	.....	3.25	.	5.25	2.90	.....	.....
20 x 10	6.80	4 25	3.50	3.25	4.00	5.35	2.90	4.25	10.50
18 x 12	6.80	3.75	.....	3.00	.....	5.25	2.90	3.50	.....
18 x 11	7.00	.....	.	.....	.....	.....	2.90	3.75	.....
18 x 10	7.00	4.25	3.50	3 25	4.00	5.35	2.90	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	2.90	4.25	10.50
16 x 12	6.80	3.75	.	3.00	.....	.....	2.85	3.50	.....
16 x 10	7.00	4.25	3.50	3.25	4.00	5 25	2.85	4.00	10.50
16 x 9	7.00	4.25	.....	3 25	4 00	5.35	2.85	4.25	10.50
16 x 8	7.00	4 50	3.50	3.25	4.25	5.35	2.85	4 25	10.50
14 x 10	6 60	3.75	3.25	3.00	.....	5 25	2.70	3.75	10.50
14 x 9	6 50	.....	.....	.....	.....	.....	2.70	3.75	10.50
14 x 8	6.60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3 25	3 00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75	....	.	....	.. .	...	2.50	3.25	.....
12 x 9	5.60	.....	.....	.....	... .	....	2.50	3.25	.....
12 x 8	5.50	3.50	.....	2.85	.....	4 85	2.50	3.50	9.00
12 x 7	5.00	3.25	.....	2.85	3 25	4.85	2.25	3.50	9 00
12 x 6	4.80	3 25	. .	2.85	3.25	4.75	2.25	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof

Business is very quiet, as few new buildings are being erected. Prices are still unsettled, especially for roofing slate.

Exports have fallen off to a marked degrece. In November the movement from New York was valued at $23,291, as against $60,154 in the same month last year. In the 11 months of the present year the exports were 58,550 squares of roofing slate, valued at $318,748, and $61,742 worth of mill stock; total, $380,490, against $791,835 in the corresponding period last year, showing a decrease in 1900 of $411,345, or $52%.

COAL TRADE REVIEW.

New York. Dec. 21.

Anthracite.

The demand for hard coal continues to tax the abilities of producers to the utmost. In spite of all reports to the contrary it may be said that there is, so far as can be seen, no favoritism in supplying different localities. The demand comes from all quarters where coal usually goes at this season, but each consumer wants a little more than the available supply will permit, and hence is apt to say that somebody else is getting coal that should come to him. In Chicago territory demand is brisk and prices firm. There is considerable coal going forward by rail, but buyers complain that the movement is not as heavy as it should be. Buying the territory between Chicago and Buffalo continues heavy, and the demand at inland points east of Buffalo shows little falling off. Since the close of lake shipments the movement of coal by water to Boston and other points east of New York has improved and is now fairly liberal. Buyers at Philadelphia and New York still find coal in short supply. All sizes are scarce.. Nut and pea have been in poorest supply of the various sizes for several winters, but now egg and stove are hard to get. It is said that a cargo of stove coal for spot delivery at New York Harbor ports cannot be had except at a larger bonus than any dealer would be likely to pay.

The collieries are hard at work, but continuous running tends to promote breakdowns in breaker machinery, while the employees show a tendency to stop work at slight provocation. An amusing instance of this spirit was shown at one of the Delaware & Hudson collieries recently when the mule-drivers stopped work for a day because the company would not provide helpers to unharness the mules and hang up harnesses at quitting time. It looks now as though there might be labor troubles of large size next April. The production for this month is likely to be about 4,500,000 tons, as the holidays will interfere with work.

Prices continue firm. At New York Harbor ports free-burning white ash f. o. b. is quoted: Broken, $4; egg, $4.25; stove and nut, $4.50; pea, $3; buckwheat, $2.25@$2.50.

Bituminous.

The seaboard bituminous trade continues to show a fair demand for coal. The poorer grades are least wanted, and of these the supply exceeds the demand. The better grades are hard to get, and producers cannot attend to all orders promptly. Car supply has been cut to 50% of the number wanted at the collieries, and transportation from mines to tide is delayed, hindering a free movement of coal.

In the far East stocks are fairly large, and it is probable that most customers have coal enough, allowing for what is going forward on old contracts. Along Long Island Sound, the demand is still heavy, particularly for the better grades. New York Harbor trade shows a large inquiry with fair shipments. All-rail trade is large.

Transportation is irregular and slow. There are blockades on several of the main lines which, the railroads state, will be removed by the end of the week. Car supply along the Pennsylvania has been very poor, 50% being apparently the maximum allowed, except to a few favored concerns. The supply on the Baltimore & Ohio has been but little better than along the Pennsylvania.

In the coastwise vessel market all classes of vessels are in short supply at the loading ports.

We quote current rates from Philadelphia as follows: Providence, New Bedford and the Sound, 65@70c.; Boston, Salem and Portland, 75c.; Wareham and Lynn, 90c.; Newburyport, $1@$1.10; Portsmouth, 85c@90c. For the farther lower ports rates are 10@15c. higher.

Birmingham, Ala. Dec. 17.

(From Our Special Correspondent.)

Extensive preparations are being made in Alabama for coal production during the coming year. There will be some large collieries opened up during the next few weeks and large development is already in sight. The Empire Coal and Coke Company, which owns 12,000 acres of good lands in Walker County, has begun working the property and a railroad 9 miles in length is being constructed for them by the Kansas City, Memphis & Birmingham Company. James Weisel, formerly with the Republic Iron and Steel Company, is organizing a company in Pennsylvania to operate extensive coal mines and coke ovens in Alabama in Jefferson County. He has been assured of large financial assistance and already he has acquired through purchase and by option more than 12,000 acres of good coal lands. The Sloss-Sheffield Steel and Iron Company is making preparations to begin the development of a large body of coal land in Walker County near America. As soon as the Ensley Southern Railroad, which will be 35 miles in length, is completed, this company will open mines. The Southern Cahaba Mining Company, which operates mines at Hargrove, is making preparations to develop several hundred more acres of good lands in the same vicinity recently leased from the University of Alabama. The Jefferson Coal Company is working two new mines at De Bernier, Ala. The Republic Iron and Steel Company is making arrangements looking to the construction of a 1½-mile railroad extension to reach some new mines near Sayreton, from which already 1,600 tons of coal have been taken.

During the past week the miners of the Ala-

bama District No. 20, United Mine Workers of America, held their annual meeting in Birmingham, and among other business elected officers for the ensuing year. Edward Flynn, of Pratt City, was elected president, and J. L. Clemo, of Adger, was chosen secretary-treasurer. A resolution demanding 8 hours a day went over to the summer meeting.

Chicago. Dec 18.

(From Our Special Correspondent.)

Anthracite Coal.—There has been no cessation in the demand for anthracite coal, the market absorbing only moderately the business coming in because of the continued scarcity of hard coal. The receipts by lake and rail have been somewhat larger during the week, but such has been the demand that the supply of coal is as limited as it was a week ago. Lake navigation is almost closed and the railroads will have to be depended on for Chicago's supply after this week, and from present appearances there will be a shortage of coal all the winter, with a consequent probility of the present high prices. Circular is $6 wholesale; retail, $7.

Bituminous Coal.—The selling of soft coal is only moderate, demand being limited to small lots and prices very uneven. Colder weather is hoped for to improve sales. Soft coal is in great supply; even the Kentucky and West Virginia coal of better grade is in better supply.

Cleveland, O. Dec. 19.

(From Our Special Correspondent.)

The lake coal trade is at an end for the season. The last cargoes were loaded on shipboard at this port last Saturday and the reports received to-night indicate that the boats carrying them have been having a great deal of trouble with ice about the Straits and may not get through. One vessel in particular is compelled to lay up in the rivers. Estimates are being made of the season's shipment and it is said to amount to about 8,000,000 tons, which is considerably in excess of the last and the preceding years' records. The principal movement at this time is in domestic coal, which is demanding all of the car space that the railroads can afford. No change has been made in the prices at which coal is selling. No. sales are being made for future deliveries on the lakes, as prices have not been fixed.

Pittsburg. Dec. 19.

(From Our Special Correspondent.)

Coal.—Every coal mine in the Pittsburg District, both river and rail, is now in full operation and steady employment for the 20,000 miners is assured for at least three months, and longer if a satisfactory wage scale can be agreed upon at the conference in January. The river mines are being operated to their fullest capacity and there will be a large tonnage ready to be shipped on the next rise in the rivers, which may be soon. The combination will not experience any difficulty in manning the tow boats as it did during the recent rise, as the strike of the river engineers was settled yesterday. Had it not been for the strike fully 10,000,000 bush. more would have been sent to the lower ports during the past two weeks. The Marine Coal Company has begun the opening of its second mine on the Monongahela River just below Lock No. 5. This company is also opening a mine at Fayette City in the Third Pool. An explosion occurred at the mines of J. W. Ellsworth & Co., at Ellsworth, last Saturday and did considerable damage besides setting the mines on fire. The mines are being flooded and as soon as the fire is extinguished they will be pumped out and operations resumed.

Connellsville Coke.—There was more activity in the coke trade last week than for several weeks. Prices remain the same—$2 for furnace and $2.25@$2.50 for foundry. The production for the week was 156,424 tons, a gain over the previous week of 1,374 tons. Shipments for the week aggregated 9,217 cars, distributed as follows: To Pittsburg and river tipples, 3,571 cars; to points west of Pittsburg, 4,166 cars; to points east of Connellsville, 1,480 cars. This was an increase of 1,170 cars.

Foreign Coal Markets.

Inquiries for coal for export continues. The larger demand is from Mediterranean ports at present. Some inquiries for coke for France are reported, but lower prices are expected than sellers are willing to give.

Ocean freights from the United States are easy. We note two charters this week, one from Philadelphia to Cape Town, South Africa, at 26s. ($6.24), and one from Newport News to Trieste, Austria, at 18s. ($4.32). The last charter taken this year from Newport News to Trieste was 4s. (96c.) above that now reported.

In France there is little new, although the demand for metallurgical fuel is reported better than it had been.

In Germany much feeling is expressed by the decision of several of the large coal syndicates to reduce production 10% from January 1st in order to maintain prices. A sharp contest over this is expected.

Messrs. Hull, Blyth & Co., of London and Cardiff, report, under date of December 8th, that coal prices have weakened considerably. Quotations are: Best Welsh steam, $4.20@$4.44; seconds, $4.08; thirds, $3.90; dry coals, $3.96@$4.08; best Monmouthshire semi-bituminous, $4.08@$4.20; seconds, $3.72@$3.96; best small steam coal, $2.16@$2.40; seconds, $1.92@$2.16; other sorts, $1.56.

These prices for Cardiff coals are f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire coals are all f. o. b. Newport, exclusive of wharfage, and are for cash in 30 days, less 2½% discount.

Freights for December loading are somewhat scarce, while the supply of tonnage is in excess of the available orders, and freight rates have declined. Some rates quoted are: Cardiff to Marseilles, $2; Genoa or Naples, $2.22; Las Palmas, $1.80; St. Vincent, $1.92; Buenos Aires, $2.94; Rio Janeiro, $3.30.

IRON MARKET REVIEW.

NEW YORK, Dec. 21, 1900

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Dec. 22, 1899. F'ces	Tons.	Week ending Dec. 21, 1900. F'ces	Tons.	From Jan., '99. Tons.	From Jan., '00. Tons.
An' racite & Coke.	257	333,428	176	222,525	13,046,602	13,202,417
Charcoal.	30	8.743	31	8,350	280,096	374,235
Totals..	287	342,171	207	230,875	13,326,098	13,576,652

The dulness incident to the approaching end of the year is evident and there is less business being transacted. This is apparent in finished materials as well as in pig iron and steel billets. Prices are generally well maintained.

Interest now centers largely in the question of ore prices and coke prices for the coming year. The events of the past year have served to increase the advantage which is held by the companies controlling their own supplies of raw material. Buyers may have to pay a price which will prevent them from competing with the large companies even more effectually than during the past year.

Birmingham, Ala. Dec. 17.

(From Our Special Correspondent.)

Alabama pig iron market conditions are still favorable. There is a large amount of iron and steel leaving the district and there are a few orders still being received. There are a number of inquiries being received as to the product and as to the capacities of the furnaces hereabouts.

There was considerable trading during the past week in pig iron warrants, Rogers, Brown & Co., the well-known iron brokers, being interested in some of the deals. This concern is buying quite heavily in this district right now. The warrant yards hereabouts are becoming short of iron.

During the past week the Republic Iron and Steel Company put in blast No. 2 furnace at Thomas, near here. The furnace has recently been repaired and its capacity will be something over 200 tons of pig iron daily. No. 1 furnace is making something like 185 tons of pig iron daily. The work on the third furnace will be practically completed next summer. There will hardly be any other furnaces to go into blast this year yet in this State, with the exception possibly of Williamson Furnace, which has been operated by the Jones Valley Iron Company, lately in an embarrassed condition.

There is a fairly good demand for finished iron. The Birmingham Rolling Mill is now in the best shape it ever was. The steel plant and steel wire, rod and nail mill, the steel plow factory and other industries at Ensley, Ala., are working steadily.

There has been a rumor that the Southern Car and Foundry Company, which has plants in Memphis, Tenn., Anniston, Ala., and other points in the South, contemplates building a big plant at Ensley. It is stated that a proposition was made to the Tennessee Coal, Iron and Railroad Company, but the proposition has not been accepted as yet. The Sloss-Sheffield Steel and Iron Company is reported as making preparations looking to the manufacture of steel and steel rails in the Birmingham District. The Sloss Company during the past week declared a dividend of 1½%.

The following quotations in the pig iron market are given: No. 1 foundry, $11.50@$12.50; No. 2 foundry, $10.50@$11.50; No. 3 foundry, $10@$10.50; No. 4 foundry, $9.75@$10; gray forge, $9.50@$9.75.

The report of the Alabama Car Service Association for the month of November shows that 39,679 cars were handled, against 69,927 during the same month last year.

Buffalo. Dec. 19.

(Special Report of Rogers, Brown & Co.)

The foundry market in this vicinity has been rather quiet during the past week. The usual lull which occurs during the closing days of each year seems to prevail, prices remain very firm, but sales have been comparatively light. Several good-sized orders have been taken, but a large number of buyers seem to be waiting until after the first of the year, and foundries are preparing to take their annual inventories. Producers are kept busy taking care of orders already on their books and daily heavy shipments continue. The bulk of the business offered during the past few days, however, has been orders for immediate shipment with a hurry-up clause attached, showing that stocks on foundry yards are low. We quote below on the cash basis, f. o. b. cars, Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $15.75; No. 2, $15.25; Southern soft, No. 1, $16; No. 2, $15.50; Lake Superior charcoal, $18; coke malleable, $15.

Chicago. Dec. 18.

(From Our Special Correspondent.)

Pig Iron.—Sales of pig iron aggregate for the past week not quite up to previous week, but the buying is good and made up of numerous small lots. No very large contracts were made, one of 2,000 tons Northern iron was the largest noted. The Southern furnaces are booking a considerable business, but the Northern furnaces are getting the bigger end of the present trade, as they are quoting prices below the Southern. The furnaces hereabouts are pretty well sold up five or six months ahead and no new business is taken for short deliveries. Prices are: Lake Superior charcoal, $19.50@$20; local coke foundry, No. 1, $15@$15.75; No. 2, $14.50@$15.25; No. 3, $14@$14.75; local Scotch, No. 1, $15@$16.25; Ohio strong softeners, No. 1, $16.25@$16.50; Southern silvery, according to silicon, $16.10@$16.60; Southern coke, No. 1, $15.35@$15.85; No. 2, $14.60@$15.10; No. 3, $14.10@$14.60; Southern, No. 1 soft, $15.35@$15.85; No. 2 soft, $14.60@$15.10; malleable Bessemer, $15@$15.50; standard Bessemer, $15@$15.50.

Cleveland, O. Dec. 19.

(From Our Special Correspondent.)

Iron Ore.—The early freezing of the lakes has put a stop to the shipment of ore which it was hoped by some shippers would extend even beyond this date. The last cargoes came into the port of Cleveland to-night, the boats bringing them having to break a passage through the ice in the rivers and the Straits, as the cargoes came from Escanaba. The only activity from now on will be in the movement to the stock piles of the furnaces from the lake docks. This has been very heavy during the last week and the demand is steadily increasing as the shipments of pig irons increase. Very little is being said about ore sales and ore prices for next year, as all are awaiting the fixing of the prices at the meeting in January. In the absence of any other prices the association figures are quoted on the different ores as follows: Bessemer, $5.50; non-Bessemer, $4,25; Mesabi, $4.25.

Pig Iron.—The market is quiet and buyers are not covering ahead, because they are awaiting the new price of pig iron after the ore prices have been fixed; in addition, buyers are easing up on their purchases, not desiring to have their stock piles filled at the time of taking their inventories the first of the year. The sales this week have been very much lighter than during those which preceded this. Foundry irons are still quoted at $14 for No. 1 and $13.50 for No. 2. Basic is being sold in small amounts at $13.50 and off basic at $12.50. Very little, if anything, is being done in Bessemer.

Finished Material.—Plates have been active this week, with heavy sales at the new price—1.50c., Cleveland. The mills see enough business ahead to keep them busy for at least six months, and the outlook for deliveries on orders placed hereafter is not promising. Some of the Eastern mills have withdrawn their agents from this territory, not desiring to try for business here when they must make a sacrifice of earnings to get it, preferring to market their wares nearer home. This is also the reported action of an agreement among the mill men. Bars are also firm, the sales having been heavy and the promise of deliveries not good. Rails seems to have been the feature of the market, many railroads, both steam and electric, rushing under cover before the capacity of the mills has been entirely sold up. The business since election has been enormous. The structural steel market remains very active, with a good demand at association prices, no effort having been made to break these. Nothing is being done with billets.

Philadelphia. Dec. 19.

(From Our Special Correspondent.)

Pig Iron.—Despite the fact of the holiday season some pig iron business was closed up rather unexpectedly by several agents who had named a price two weeks ago to stand good this month. A high authority said to-day it is very difficult to sell any kind of crude iron or steel for distant delivery. This is only a reiteration of what has been frequently said heretofore. Eastern iron and steel people feel a great deal of interest in the ultimate outcome of freights on coal, coke, iron and steel in their competitive effects. The strong undertone of the market promises to keep pig steady for the winter. Any advance would be a signal for increased

production. Quotations have not changed since last week.

Billets.—Billets will advance rather than decline. There is a marked increase of work into which billets enter and Eastern consumers are inclined to take it for granted that there is no chance for a fall in prices. Representatives say that January business will be heavy, but the opinion is not universal.

Merchant Bar.—Prices average 1.50c. More common iron has sold this month than usual, and mill men are gathering in a good deal of retail business. More capacity is to be started at nearby mills. The central Pennsylvania bar mills are doing a good business.

Skelp.—A very good business has been done by all the skelp mills at full prices. Yesterday orders were considered for large lots. The outlook is very good for steady skelp work this winter.

Sheets.—Mill representatives have done a good business during the past month in heavy and galvanized sheets. There is no difficulty in getting prices asked. The retail business is gaining.

Merchant Steel.—The mill people are marking up prices rather than shading and for the time of year our business is very good.

Plate.—There has been no change in prices. Orders are not coming along at present, but as far as our mill men are able to forecast there will be a good run of orders in January. Prices are very strong and under present combination methods no weakness is probable.

Structural Material.—Additional export requirements are being figured on this week, but they arise out of requirements that were talked of early in November.

Steel Rails.—The quotation of $26 is maintained and those who think they know what the probabilities are say $28 will be asked soon. This view is contradicted by brokers representing buyers who say that orders for 1,000,000 tons rails are held back because the price asked is $4 above what they think they ought to pay.

Pittsburg. Dec. 19.

(From Our Special Correspondent.)

The December dullness in the iron and steel markets continues. Buyers are evidently holding off until the first of the year and are only placing orders for immediate requirements. While there have been no sales of Bessemer pig iron here of any consequence the price quoted is 90c. higher, and $13 at the furnace seems to be the fixed price for the present. There is no change in forge and foundry iron. A few small sales of Bessemer steel billets were made during the week at the pool price. Sheets are a trifle stronger this week and the demand is better than it has been for some time. It is reported here, but not verified, that a leading steel interest that had 50,000 tons of Bessemer iron in the valleys had offered it for sale. During the week, it is said, 10,000 tons were sold at $13 at the furnace, when the offer was withdrawn. The National Steel Company's furnace at Sharon, Pa., was put in blast yesterday, after several months idleness. Some extensive improvements have been made. It is reported that the Clare Furnace at Sharpsville, controlled by M. A. Hanna & Co., of Cleveland, will be started in two weeks.

Pig Iron.—Not more than 500 tons of Bessemer pig iron were sold here during the week, the price being $13.90 delivered at Pittsburg, or $13 at the Valley furnaces. About 3,000 tons of gray forge were sold this week at $13.25@$13.50 delivered at Pittsburg. A few small sales of foundry No. 2 are recorded at $14@$14.50, Pittsburg.

Steel.—There have been no transactions in Bessemer steel billets of any note this week. The agreed price is $19.75, Pittsburg. The price of open-hearth billets remains the same—$1 a ton higher than Bessemer. There is no change in the price of steel plates or bars.

Sheets.—There is an increased demand for sheets this week and prices are stronger. No. 27 is quoted at 2.85@2.90c. and No. 28 at 2.95@3c. Galvanized sheets are 70 and 5% off, with no freight allowance.

Ferro-manganese.—The price this week for 80% domestic is lower, the leading producer quoting $62.50 for car-load lots.

New York. Dec. 21

The local iron market is firm, but the volume of business is rather light, owing to the approach of the holidays and stocktaking time. In foreign trade we note shipments of $30,000 worth of machinery and $21,000 worth of finished iron to Argentina, $34,000 worth of railroad material to Cuba and $27,000 worth of steel rails, $22,000 worth of manufactured iron and $20,000 worth of machinery to Mexico.

Pig Iron.—Buying is limited. We quote for Northern irons, tidewater delivery: No. 1 X foundry, $16.75@$17.75; No. 2 X, $15.50@$16; No. 2 plain, $15@$15.25; gray forge, $14.50@$14.75. For Southern irons on dock, New York No. 1 foundry, $15.25@$15.75; No. 2, $14.50@$15; No. 3, $14.25@$14.50; No. 4, $13.50@$14; No. 1 soft, $15.50@$15.75; No. 2, $14.25@$14.50.

Bar Iron and Steel.—Demand has held up fairly well. We quote common bars at 1.35c. for large lots on dock; refined bars, 1.45c.; soft steel bars, 1.40c.

Plates.—Business is fair, with prices firm. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 1.65c.; flange, 1.75c.; marine, 1.85c.; firebox, 1.85c.; universal, 1.60c.

Steel Rails and Rail Fastenings.—Local sales are small. Light rails are selling between $25@$30. Standard sections are quoted at $26. Splice bars are 1.35@1.40c.; spikes, 1.55c..; fish plates, 1.35c.; bolts, 2.10@2.30c.

Structural Materials.—Demand is mostly confined to small lots. We continue to quote large lots at tidewater: Beams, 1.65c.; channels, 1.65c.; angles, 1.30c.; tees, 1.70c.; zees, 1.65c.

METAL MARKET.

New York. Dec. 21.

Gold and Silver.

Gold and Silver Exports and Imports
At all United States ports in November and year.

Metal.	November.		Year.	
	1899.	1900.	1899.	1900.
GOLD.				
Exports	$264,310	$677,207	$33,521,900	$53,705,524
Imports	2,904,043	10,581,516	45,714,718	56,499,635
Excess	I. $2,639,733	I. $9,904,309	I. $12,192,818	E. $2,794,111
SILVER.				
Exports	4,339,166	5,258,080	47,760,823	58,863,325
Imports	2,771,920	3,607,232	27,817,710	36,745,936
Excess	E. $1,567,246	E. $1,650,848	E. $19,943,113	E. $22,117,389

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending December 20th, 1900, and for years from January 1st, 1900, 1899, 1398, 1897.

Period.	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	$140,000	$9,878	$1,194,485	$27,757	E. $1,296,850
1900..	36,842,397	10,826,469	38,344,568	4,648,819	E. 59,711,617
1899..	12,299,386	13,895,927	29,025,832	3,758,556	E. 23,670,735
1898..	6,842,930	98,587,176	33,806,880	3,152,301	I. 61,089,007
1897..	29,815,546	43,251,753	35,510,553	3,074,474	E. 18,999,900

Exports of gold were to the West Indies; of silver to London. Imports, both of gold and silver, were from the West Indies and Mexico.

The United States Assay Office in New York reports the total receipts of silver at 101,000 oz. for the week. Total since January 1st, 4,733,000 oz.

Average Prices of Silver per oz. Troy.

Month.	1900.		1899.		1898.	
	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.
January...	27.30	59.30	27.42	59.36	26.29	56.77
February..	27.49	59 76	27.44	59.42	25.89	56.07
March.....	27.59	59.81	27.48	59.64	25.47	54.90
April.....	27.41	59.59	27.65	60.10	25.95	56.02
May.....	27.56	59.96	28.15	61.23	26.31	56.98
June.....	27.81	60.42	27 77	60.43	27.09	58.61
July.....	28.23	61.25	27 71	60 26	27.32	59.06
August....	28.13	61.14	27.62	60.00	27 48	59.54
September	28.85	6'.63	27 15	58 89	28.05	60.68
October ..	29.58	63.83	26.70	57.98	27.90	60.42
November	29.66	64.04	27 02	58.67	27.93	60.60
December.	....	.....	27.21	58.99	27.45	59.42
Year....	.....	.....	27.44	59 58	26.76	58.20

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1900.	1899.	1900.	1899.	1900.	1899.	1900.	1899.
Jan	15 58	14.26	27.07	22.48	4.68	4.18	4 65	5.34
Feb.....	15.78	17.02	30.58	24 20	4.675	4.49	4.64	6.28
March...	16.29	16.35	32.90	23.82	4.675	4.37	4.60	6.31
April....	16.76	17.13	30.90	24.98	4.675	4.31	4.71	6.67
May.....	16.34	17.20	29.37	25.76	4.181	4.44	4.53	6.88
June.....	15.75	16.89	30 50	25.85	3.901	4.43	4.29	5.98
July.....	15.97	17.10	33.10	29.63	4.030	4.52	4.28	5.82
August..	16.35	17.42	31.28	31.53	4.250	4.57	4 17	5.65
Sept.....	16.44	17 34	29.42	32 74	4.350	4.58	4.11	5.50
October..	16.37	16.94	28.54	31.99	4.350	4.575	4.15	5.32
Nov.....	16.40	16.49	28.25	28.51	4.350	4.575	4.29	4.64
Dec	.....	15.85	.....	25.88	.....	4.64	.. ..	4.66
Year....	.....	16.67	.. ..	25.12	.....	4.47	.....	5.75

Commencing with March 17th, the prices given in the table for copper are the averages for electrolytic copper; this is the case for both 1899 and 1900. The average price for Lake copper for the year 1899 was 17.61c. For January, 1900, the average price of Lake copper was 16.33c.; for February, 16.08c.; for March, 16.55c.; for April, 16.94c.; for May, 16 55c.; for June, 16c.; for July, 16.16c.; for August, 16.58c.; for September, 16.69c.; for October, 16.64c.; for November, 16.- c.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	$ .50	$ .51½
Peruvian soles and Chilean pesos	.46	.47½
Victoria sovereigns	4.85	4.88
Twenty francs	3.84	3.88
Twenty marks	4.73	4.78
Spanish 25 pesetas	4.78	4.82

Imports and Exports of Metals.

Port.	Week, Dec. 19.		Year 1900.	
	Expts.	Impts	Expts.	Impts.
New York. (N. Y. Metal Exchange.)				
Aluminum.....long tons	10	.....	154	96
Antimony ore... " "	.....	20	.....	2,865
" regulus.. " "	.....	33	.....	1,963
Chrome ore..... " "	.....	.....	.....	1,500
Copper, fine ..... " "	1,285	2,193	97,419	20,870
" matte.. " "	.....	.....	4,569	268
" ore..... " "	.....	.....	.....	55,869
" ash..... " "	.....	.....	.....	98
Ferro-Chrome .. " "	.....	.....	.....	31
Ferro-mangan'se " "	.....	.....	.....	763
Iron ore ..... " "	.....	.....	.....	21,499
" pig, bar, rod " "	218	25	23,387	6,172
" pipe..... " "	237	.....	14,886	157
" plates, sheets " "	.....	.....	1,071	43
Lead..... " "	1,640	150	77,506	64,999
" ore.. ..... " "	.....	.....	.....	9,700
" dross..... " "	.....	.....	.....	24
Manganese, ore. " "	.....	.....	.....	11,492
Metals, old, scrap " "	80	53	5,474	6,391
Composition... " "	202	.....	4,516	385
Nails..... " "	.....	.....	19,505	.....
Nickel ..... " "	95	.....	2,429	114
" ore. matte " "	.....	.....	.....	5,393
Railr'd material. " "	.....	50	9,671	5,862
Rails, old..... " "	.....	.....	8,156	518
Spiegeleisen..... " "	.....	.....	.....	3,407
Steel bars, plates " "	1,529	369	55,789	16,991
" rails..... " "	9.00	.....	62,494	176
" wire..... " "	160	.....	30,150	78
" not speci'd. " "	317	52	18,845	2,868
Tin ..... " "	.....	1,136	5	24,992
" and black plates " "	.....	831	55	34,972
Zinc..... " "	.....	5	675	455
" dross..... " "	6	.....	771	50
" ashes, skim " "	39	.....	1,318	20
" ore..... " "	.....	.....	13,304	.....
Baltimore. (Special Correspondence).				
Antimony.. .....long tons	.....	.....	.....	5
Chrome ore..... " "	.....	.....	.....	6,905
Copper, fine..... " "	238	239	38,542	4,990
Ferro-manganese " "	.....	.....	.....	155
Iron pig, bar. etc. " "	.....	483	4,900	23,695
" ore..... " "	.....	4,831	.....	410,758
" pyrites..... " "	.....	.....	.....	40.425
Manganese ore.. " "	.....	2,065	.....	121,472
Metals, old & Rails " "	.....	.....	568	2
Nails ..... " "	22	.....	1,595	.....
Pipe, iron & steel " "	96	.....	5,813	.....
Silicon ..... " "	.....	.....	.....	85
Spiegeleisen..... " "	.....	.....	.....	1,157
Steel, bars, etc.. " "	49	.....	45,160	4,264
" wire ..... " "	.....	17	971	195
" rails..... " "	951	.....	80,767	.....
Tin..... " "	.....	35	.....	330
" and blackplates " "	.....	165	.....	3,492
Zinc..... " "	.....	.....	5	.....
Philadelphia. (Week ending Dec. 14)				
Antimony. ....long tons	.....	.....	.....	14
Chrome ore..... " "	.....	.....	.....	3,650
Copper, fine..... " "	.....	.....	3,989	.....
" ore..... " "	.....	.....	.....	43,815
" pyrites.. " "	.....	.....	.....	100
Iron, pig..... " "	.....	.....	1,355	3,929
" ore ..... " "	.....	.....	13,120	290,475
" pyrites ..... " "	.....	.....	.....	87,155
Manganese ore.. " "	.....	.....	.....	77,326
Spiegeleisen..... " "	.....	.....	.....	4,153
Tin ..... " "	...	25	.....	708
" and black plates " "	...	.....	.....	2,595
Zinc..... " "	...	.....	67	.....
" ore.. ..... " "	...	.....	5,057	.....

Total United States.

Articles.	Oct. 1900.		Year, 1900.	
	Expts.	Impts.	Expts.	Impts.
Antimony.....long tons	.....	122	11	1,330
" ore(... " "	.....	378	.....	2,132
Copper, in all forms..... " "	12,682	7,561	138,833	61,955
Iron, pig & bar.. " "	66,375	3,006	234 924	62,512
" ore..... " "	9,820	65,311	46,846	772,608
Iron & steel plates " "	6,279	156	40,051	4,726
Iron & steel rails " "	36,628	.....	330.739	991
" " wire " "	6,499	141	65,654	1,479
Lead, in all forms " "	.....	7,131	.....	81,771
Manganese ore and oxide..... " "	.....	1,906	3	249,454
Nickel " & matte " "	231	.....	2,261	.....
Nails, cut..... " "	626	.....	9,149	.....
" wire..... " "	1,303	.....	24,227	.....
Quicksilver..... " "	22	.....	299	.....
Steel, billets, rods, etc..... " "	36,741	2,507	135,900	28,943
Tin..... " "	46	1,931	441	26,416
" & black plates " "	22	3,097	542	53,799
Zinc..... " "	171	50	18,470	814
" ore ..... " "	1,637	.....	31,602	.....

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. per lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c. per lb. Spelter or zinc, 1½c. per lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

Financial Notes of the Week.

There is little new to report this week in relation to the general business situation. Money is commanding better rates and the usual dulness incident to the close of the year is beginning to be apparent.

The approach of the holiday season has caused dulness in the silver trade, and inquiry has been rather light. The price has receded about 3/8d. from the highest point recently, and market closes with moderate inquiry at 29½d.

The statement of the United States Treasury on Wednesday, December 19, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

	Dec. 5.	Dec. 19.	Changes.
Gold	$95,247,486	$99,269,909	I. $3,982,423
Silver	8,367,043	8,748,884	I. 381,841
Legal tenders	11,214,178	10,178,657	D. 1,035,521
Treas. notes, etc.	76,580	80,057	I. 3,477
Totals	$114,945,287	$118,277,507	I. $3,332,220

Treasury deposits with national banks amounted to $98,849,930 for the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House for the week ending December 15th—gives the following totals, comparison being made with the corresponding week in 1899 and 1898:

	1898.	1899.	1900.
Loans and discounts	$708,555,700	$676,409,900	$792,760,000
Deposits	806,912,100	739,540,300	842,668,100
Circulation	16,341,700	16,065,300	30,721,300
Reserve:			
Specie	164,325,100	141,230,600	157,655,300
Legal tenders	54,376,300	50,680,300	59,337,100
Total reserve	$218,701,400	$191,910,900	$216,992,400
Legal requirements	201,728,025	184,885,075	210,447,025
Balance, surplus	$16,973,375	$7,025,825	$6,545,375

Changes for the week, this year, were increases of $116,000 in circulation, $1,179,200 in legal tenders, and $624,250 in surplus reserve; decreases of $13,682,500 in loans and discounts, $18,376,600 in deposits, and $5,149,100 in specie.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding date last year:

Banks.	1899. Gold.	1899. Silver.	1900. Gold.	1900. Silver.
N.Y. Ass'd.	$141,230,600	.....	$157,655,300	.....
England	149,047,795	.....	155,516,665	.....
France	376,765,955	$233,054,265	465,194,820	$222,104,540
Germany	125,425,000	64,610,000	133,570,000	68,805,000
Spain	68,000,000	70,875,000	69,695,000	81,560,000
Neth'l'ds	18,785,000	29,525,000	24,385,000	27,675,000
Belgium	15,025,000	7,510,000	14,905,000	7,455,000
Italy	77,255,000	7,470,000	76,925,000	8,710,000
Russia	431,885,000	24,840,000	360,120,000	30,110,000

The returns of the Associated Banks of New York are of date December 15th, and the others are of date December 14th, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only.

Exports of merchandise from the United States in November were valued at $136,678,594, being $26,638,773 less than in October, but $12,922,683 more than in November, 1899. For the 11 months ending November 30th the statement is as follows:

	1899.	1890.
Exports	$1,152,199,938	$1,331,971,897
Imports	728,233,567	759,944,885
Excess, exports	$423,966,371	$572,027,012
Excess of exports, silver		22,117,389
Total		$594,144,401
Deduct excess of imports, gold		2,794,111
Net apparent balance		$591,350,290

The gold and silver movement in detail will be found in the usual place, at the head of this column.

Shipments of silver from London to the East for the year up to December 6th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India	£4,939,725	£6,998,739	I. £2,059,014
China	1,318,475	2,162,486	I. 844,011
The Straits	274,785	795,616	I. 520,831
Totals	£6,532,985	£9,956,841	I. £3,423,856

Arrivals for the week, this year, were £266,000 in bar silver from New York, £3,000 from Australia, £1,000 from Vera Cruz and £6,000 from the West Indies; total, £276,000. Shipments were £78,000 in bar silver to Bombay and £81,500 to China; total, £159,500.

Indian exchange is firmer at 15.97d. per rupee, with a stronger demand for Council bills in London. More gold is reported taken in Australia for Indian account.

Other Metals.

Daily Prices of Metals in New York.

December.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London. Pence.	Copper. Lake, cts. ℔ lb.	Copper. Electrolytic ℔ lb.	Copper. London £ ℔ ton.	Tin, cts. ℔ lb.	Lead cts. ℔ lb.	Spelter. N. Y. cts. ℔ lb.	Spelter. St. L. cts. ℔ lb.
15	4.84¼	64	29⅝	16⅞	16¼	....	26½	4.32½@4.37½	4.25	4.05
17	4.84¼	64	29⅝	16⅞	16¼	71¾	25½@26	4.32½@4.37½	4.22½	4.05
18	4.84¼	64	29⅝	16⅞	16¼	71½	24½@25½	4.32½@4.37½	4.22½	4.02½
19	4.84¼	64	29⅝	16⅞	16¼	71½	25@25½	4.32½@4.37½	4.20	4.02½
20	4.84¼	63¾	29½	16⅞	16¼	71¾	26	4.32½@4.37½	4.20	4.00
21	4.84¼	63¾	29½	16⅞	16¼	71¾	26¼	4.32½@4.37½	4.20	4.00

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market is exceedingly quiet, and domestic manufacturers continue to hold aloof. European orders are few and far between, and buyers over there appear to take hold only when concessions are made. It is generally believed that after the turn of the year a material change in conditions will occur, but meanwhile the market is very dull. Prices have not suffered much, as the large producers are not pressing sales. We quote Lake copper at 16⅞c.; electrolytic in cakes, wirebars and ingots at 16¼c.; in cathodes at 16c.; casting copper at 16⅛c.

The market for standard copper in London has been somewhat firmer. It closed last week at £71 12s. 6d. for spot, £72 5s. for three months, and opened on Monday 2s. 6d. higher. On Tuesday it was £71 10s. for spot, £72 2s. 6d. for three months, which prices ruled until Thursday, when £71 15s. for spot, £72 7s. 6d. for three months was done. The market closes at £71 15s. for spot, £72 10s. for three months.

Refined and manufactured sorts we quote: English tough, £75 5s.@£75 15s.; best selected, £78 10s.@£79; strong sheets, £85; India sheets, £82; yellow metal, 7d.

Statistics for the first half of December show a decrease of 400 tons.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the companies, was as follows for November and the 11 months ending November 30th, in long tons (2,240 lbs.) of fine copper:

	November. 1899.	November. 1900.	11 months 1899	11 months 1900.
U. S., reporting mines	19,617	19,876	210,218	209,363
U. S., outside sources	3,400	3,400	28,000	37,100
Total, U. S.	23,017	23,276	238,218	246,763
Foreign, reporting mines	7,896	7,752	81,880	81,848
Totals	30,913	31,028	320,098	328,611
Exports, U. S.	10,899	9,508	103,364	128,341

The United States production in November showed an increase of 259 tons over last year. For the eleven months the gain was 8,545 tons, or 3.6%, the reporting mines showing a decrease of 855 tons, while there was a gain of 9,400 tons from outside sources. The production of the foreign reporting mines was substantially the same as last year. United States exports show an increase of 44.977 tons, or 43.7%, and were this year 60.1% of the total output.

Tin.—Early in the week the market continued to decline, but on Wednesday a complete change occurred when the London market turned and it became evident that the decline had been overdone. Sellers generally held back and prices, especially for spot tin, which continues to be scarce, quickly advanced from 24½@26c. At the close we quote spot tin at 26¼c., January delivery at 26c.

The London market, which closed last week at £117 15s. for spot and the same for three months, opened on Monday at about these figures, but quickly declined £2, and on Tuesday further £2. On Wednesday it opened at £113, but jumped to £115 5s., and on Thursday it was up to £117. It closes at £118 7s. 6d. for spot and 10s. lower for three months.

Exports of tin from the Straits for the nine months ending September 30th are reported as below, in long tons:

	1898.	1899.	1900.
United States	17,798	18,556	11,661
Europe	15,844	15,790	21,855
India and China	1,961	974	1,165
Totals	35,603	35,320	34,681

The total this year was 639 tons less than in 1899, and 922 tons less than in 1898.

Lead.—There is no change in the market. Business continues to be done in good volume at last figures, 4.22½@4.32½c: St. Louis, 4.32½@4.37½c. New York.

The foreign market for Spanish lead is again somewhat lower, being quoted at £16@£16 2s. 6d., with English lead at £16 5s.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is dull and uninteresting, Missouri is selling from 4.20@4.22½c. and desilverized at 4.32½c. Demand is exceedingly light. We look for no improvement until after the holidays.

Spelter.—Some metal being pressed for sale, the market has declined somewhat this week, St. Louis selling down to 4c. and New York to 4.20c. Buying is not of very large volume, but it is expected that a change for the better will take place after the turn of the year.

Our cables report the foreign market as £18 12s. 6d. for good ordinaries, specials 5s. higher.

Antimony.—We quote Cookson's at 10c.; Hallett's at 9¼c.; U. S. Star at 9¼c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of order.

Platinum.—Consumption continues good and prices are strong. For ingot platinum in large quantities $18.20 per Troy oz.. is quoted in New York. In London a recent quotation gives 75s. per ounce, unmanufactured, and 77s. 6d.@80s. for crucibles, etc. This is very nearly on a parity with New York prices.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 72c. per gram.

Quicksilver.—The New York quotation continues unchanged at $51 per flask for large lots, with $52.50@$54 asked for small quantities. San Francisco prices are $48@$48.50 on local deliveries, and $43.50@$44 on export orders. The London price is £9 2s. 6d. per flask, with the same price named from second hands.

Quicksilver receipts at San Francisco in November were 1,654 flasks. For the 11 months ending November 30th the receipts were 18,646 flasks, against 21,739 flasks in 1899 and 20,945 in 1898. These receipts do not include shipments made direct from the mines overland and to consumers in California. Exports of quicksilver from San Francisco by sea for the 11 months were as follows: Siberia, 7 flasks; China, 1,000; Australia, 100; Central America, 1,314; Mexico, 4,131; British Columbia, 11; Washington, 5; New York, 20; total, 6,588 flasks. In 1899 the total was 9,624 flasks, showing a decrease of 3,036 flasks, or 31.6%, this year.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.		Per lb.
No. 1, 99% ingots	33@37c.	Ferro-Titanium (20%)	$1.00
No. 2, 90% ingots	31@34c.	Ferro-Tungsten (37%)	32c.
Rolled sheets	42c. up	Magnesium	$2.75@$3
Alum.-bronze	20@23c.	Manganese (over 99%)	$1.05
Nickel-alum	33@39c.	Mangan'e Cop. (20% Mn)	32c.
Bismuth	$2.25	Mangan'e Cop. (30% Mn)	38c.
Chromium (over 99%)	1.00	Molybdenum (Best)	$1.45
Copper, red oxide	50c.	Phosphorus	50c.
Ferro-Molyb'um (50%)	$1.00	American	70c.
Ferro-Titanium (10%)	90c.	Tungsten (Best)	86c.

Variations in prices depend chiefly on the size of the order.

LATE NEWS.

(From Our Special Correspondent.)

London, England, December 11th.—The chief item of interest in the London mining market this week has been the explanation given by the directors of Stratton's Independence for the recent collapse. As will be remembered, this mine was introduced rather over a year ago on the London market, and the whole of the share capital was allotted to Mr. Stratton, who, through the Venture corporation, has been disposing of them on the market ever since. The full circumstances of the case were given at the meeting of the company this week. It appears that on the flotation of the company Mr. Rickard had made a very full personal investigation of the property, but that ever since then his duties as consulting engineer to the company have been quite nominal, for as Mr. Stratton held the bulk of the shares he controlled the company and the mining management, and did not allow Mr. Rickard to personally sample the new developments. The manager reported to Mr. Rickard on these points and Mr. Rickard passed on the reports to the company, but attached his own name to the statements. The directors were in just as helpless a condition. But when Mr. Stratton had finally disposed of his shares the directors assumed control and Mr. Rickard appointed a new manager. Then he found that the statements made to him were all exaggerated. Mr. Hammond's subsequent examination confirmed this view. The directors propose to devote part of the proceeds of ore in sight to extensive exploratory work, and it is to be hoped that something will be found, though both Mr. Hammond and Mr. Rickard agree that the unexplored ground does not show much sign of payable ore. The shareholders as a whole take matters fairly philosophically and do not revile the directors or Mr. Rickard as much as seemed probable at one time.

[A full statement with regard to past operations and present conditions at the Independence will be found on another page.—Editor E. & M. J.]

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 750.)

New York. Dec. 21.

Heavy Chemicals.—Alkali is strong, as domestic makers report limited stocks at works for delivery outside of regular contracts. Caustic soda is in the same position. Consequently the new business doing for prompt delivery is handled by jobbers. Bicarb. soda meets with an increased demand for next year's delivery, and a small export business is noted at $1 per 100 lbs., f. o. b. works by second-hands.

Sal soda makers are again at odds, and prices are consequently unstable. Bleaching powder for 1901 delivery has been well contracted for, and an increase is reported over 1900 sales. Chlorate of potash is limited in supply on spot, and prices are firmer.

We quote per 100 lbs. as follows: Domestic soda ash in bulk is worth 2¼c. per 100 lbs. less than quotations below.

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali, 58%.	75@80	.....	87½@92½
" 48%.	80@85	.....	.....
Caustic Soda, high test ..	$1.75@$1.80	.....	.....
powd. 60%	.....	2.75	.....
70@74%.	.....	2.85	.....
98%.	.....	3 25	3.75@4.00
Sal Soda 60		70	65@67½
"conc.	1.12½@1.75	.....	1.75
Bicarb. Soda..	1.06¼@1.12½	.....	1.37½@1.75
" " extra	3.25@3.50	.....	.....
Bleach Pdr., Eng. prime..	.....	.....	2.06@2.10
other brands.	.....	.....	1.90@1.95
Chl. Pot cryst	.....	8.50@8.75	9.75@10.00
" powd.	.....	8.75@9.00	9.75@10.00

Acids.—Acetic is unsettled for next year's delivery, as makers are not in harmony as to prices, but immediate shipments are nominally unchanged. English makers of oxalic are said to be unwilling to book further 1901 orders at $6 per 100 lbs., as this price is below the profit line. Sulphuric acid shows an improved demand from powder makers. Recently export sales of blue vitriol were reported at $4.62½@$4.87½ per 100 lbs., and for home consumption at $5, but with a higher copper market prices have strengthened.

Quotations as below are for large lots delivered in New York and vicinity, per 100 lbs. unless otherwise specified.

Acetic, No 8 in lbs.	$1.62½	Nitric, 36°	$3.87½
Blue Vitriol.	5.00@5.12½	Nitric, 38°	4.12½
Aqua Fortis, 36°	3 62½	Nitric, 40°	4.37
Aqua Fortis, 38°	3 87½	Nitric, 42°	4.75
Aqua Fortis, 40°	4.12½	Oxalic	5.75@6.00
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 18°.	1.20	Sulphuric, 60°	1.05
Muriatic, 20°.	1.35	" bulk 50° ton	14.00
Muriatic 22°	1.50		

Brimstone.—Stronger, owing to improved primary market. Spot best unmixed seconds are nominal at $22@$22.75 per ton, and shipments $21@$21.25, while best thirds are quoted $2 per ton less.

Pyrites.—The Pennsylvania Salt Manufacturing Company imported at New York this week 3,332 metric tons copper pyrites from Spain. Better demand from fertilizer makers for pyrites is reported. Prices unchanged. We quote as follows: Mineral City, Va., lump ore (basis 45%), $4.75 per long ton and fines $4.20. Charlemont, Mass., lump, $5.50 and fines $5. Spanish pyrites, 12@14c., as to percentage of sulphur contents, delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46@51% of sulphur; American from 42@44%.

Fertilizing Chemicals. — Notwithstanding Southern buying, the market for leading ammoniates is quiet. The Fisheries Company (the menhaden combination) has declared a 3½% semi-annual dividend on its preferred stock, payable January 1st. The profits for the season up to October 31st were about $141,000, which will be increased by about $30,000, representing subsequent earnings, making total profits of $170,000. In North Carolina the sales of fertilizers in the year ended December 1st, 1900, amounted to 276,238 tons, against 244,538 tons in the previous year, showing an increase of 31,700 tons in 1900.

Quotations are: Sulphate of ammonia, gas liquor, $2.80@$2.85 per 100 lbs.; blood, $2.10@$2.15 per unit, f. o. b. Chicago, and $2.25 for soft New York; tankage, $1.90 and 10c. per unit, f. o. b. Chicago; Calcutta bone-meal, $22 for best grades and $19 for ordinary grades; domestic steamed ground bone, $19@$19.50 per ton.

Nitrate of Soda.—The market is firmer, owing to non-arrivals and vessels in port recently having finished discharging their cargoes. Spot nitrate of soda is held at $1.85 per 100 lbs. Futures are also stronger on account of an advancing coast market, 6s. per qtl. having been paid there for 1901 deliveries. Importers in New York are therefore disinclined to sell under $1.85. The European statistical position in the 11 months ending November 30th shows total imports of 1,040,430 long tons, and deliveries of 1,083,870 tons. The exports to Europe from Chilean ports during this period amounted to 1,035,728 long tons. Loadings on December 1st for Europe were 135,608 tons, while the visible supply, including stocks and the nitrate of soda afloat, amounted on December 1st to 671,440 tons.

Phosphates.—Quiet. Foreign consumers are not willing yet to contract for any large supply of rock while c. i. f. prices are so firm. In Tennessee f. o. b. prices have eased off a little, and sales of high-grade rock for export are reported at $2.85@$2.90 per ton, while domestic high-grade rock brought $2.70@$2.85. In November the exports of Tennessee rock from Pensacola amounted to 8,361 tons, making a total for the 11 months this year of 120,942 long tons, against 117,922 tons last year; an increase of 3,020 tons in 1900.

The shipments of high-grade Florida phosphate rock from Fernandina in November amounted to only 3,800 tons, while the December shipments are estimated at 11,000 tons. The movement from Fernandina this year would be 178,700 long tons, showing a falling off of 67,406 tons, as compared with 1899.

In South Carolina miners report large stocks, and a quiet business, while prices are nominally unchanged.

Renewed efforts are being made by Florida high-grade rock producers to form a combination headed by W. D. Auchincloss, president of the Dunnellon Phosphate Company. Early in 1899 the scheme was tried and foreign capitalists were interested, but the compact was never effectual, owing to the differences of opinion as to property valuations, especially of the smaller concerns.

Phosphates.	Per Ton F. o. b.	C i. f. Un'd Kingdom or European Ports.	
		Unit.	Long ton.
*Fla. hard rock (77 @ 80%)	$7.50@8.00	8¼@8½d	$12.87@13.26
*Fla. land pebble (68 @ 73%)	4 35	7¼@7½d	10 15@10.50
*FlaPeace River 58@63%)	3.00@3.50	6¼@7¼d	7.50@8.70
†Tenn. rock 78%, export.	2.85@2.90	7¼@7½d	11.31@11.70
†Tenn.....78% domestic.	2.70@2 8	.....	.....
†Tenn.....75% "	2.50@2.75	.....	.....
†Tenn .....72% "	2.25@2.50	.....	.....
‡So. Car. rock, crude....	4.00	.....	.....
§So. Car. rock, dried.....	4.50	6½d	7.80
Algerian, rock...(63@70%	.....	7@7½d	9.38@10.05
Algerian, rock...(58@63%)	.....	6½@7¼d	7.80@8.70

* Fernandina. † Mt. Pleasant. ‡ At mines. § On vessels, Ashley River.

Liverpool. Dec. 5.

(Special Report of Joseph P. Brunner & Co.)

The demand for chemicals is not brisk, although there is a fair amount of business passing at full prices. Soda ash is strong. Quotations vary according to export market, but range for tierces may be called about as follows: Leblanc ash, 48%, £5 12s. 6d.@£5 17s. 6d.; 58%, £6 2s. 6d.@£6 7s. 6d. per ton net cash. Ammonia ash, 48%, £4 10s.@£4 15s.; 58%, £4 15s.@£5 per ton net cash. Bags 5s. per ton under prices for tierces. Soda crystals are unchanged and selling at £3 7s. 6d. per ton, less 5% for barrels or 7s. less for bags, with special quotations for a few favored markets. Caustic soda is in fair demand and quotations are firm as follows: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.@£10 17s. 6d.; 76%, £11 5s.@£11 10s. per ton net cash.

Bleaching powder is steady at £6 10s.@£7 per ton net cash for hardwood packages as to market, and business is passing at the range named. Chlorate of potash is rather dull, but the price is steady at 3¾d. per lb. net cash. Bicarb. soda is in moderate request and for most markets £6 15s. per ton, less 2½%, is the figure for the finest quality in 1 cwt. kegs, with usual allowances for larger packages, also special quotations for a few favored quarters.

Sulphate of ammonia is in light demand, but prices keep fairly steady at about £11@£11 2s. 6d. per ton, less 2½% for good gray 24@25% in double bags f. o. b. here. Nitrate of soda is quiet at £8 10s.@£8 15s. per ton, less 2½% for spot lots in double bags f. o. b. here, as to quality.

MINING STOCKS.

Complete quotations will be found on pages 747 and 748 of mining stocks listed and dealt in at:

Boston.	Philadelphia.	Montreal.
Colo. Springs.	Salt Lake.	London.
Denver.	San Francisco.	Mexico.
New York.	Spokane.	Paris.
	Toronto.	

New York. Dec. 21.

There was some recovery in the copper shares. Amalgamated fluctuated between $95 and $89¾, and Anaconda between $49¼ and $47. British Columbia continued strong on curb, and sales were reported at $20@$21½. Sales of Tennessee are also noted at $16½@$17. Union, of North Carolina, was active, insiders selling at $5.75@$5.50.

Interest was centered in the American Smelting and Refining shares, as the officers of the company had decided at Tuesday's meeting to ask the stockholders' authorization for an increase in the capital stock from $65,000,000 to $100,000,000. It is proposed to devote the additional capitalization to the possible purchase of the Guggenheim plants and to increase the present cash resources, so as to avoid further borrowing to carry on the business. A meeting of the stockholders of the American Smelting and Refining Company will be held in January to take definite action on this matter. On Wednesday American Smelting and Refining common shares sold at $54¼@$55¾ and the preferred at $97@$98.

A sale of 100 shares of Homestake, of South Dakota, was made at $75, which is $3½ less than the last sale in November. The company will pay its regular monthly dividend of 25c. per share and an extra of 25c. ($105,000 in all) on December 26th. This will make a total of $1,260,000 paid this year, equal to 6% per annum on the capital stock. Since its incorporation the company disbursed in dividends a total of $9,403,750, making it the foremost gold mine dividend payer to-day.

Alice, of Montana, sold at 40c., the first transaction in some time.

Isabella, of Cripple Creek, Colo., sold off 3c. at 69c. Jack Pot brought 74c.

Brunswick, of California, which collects a 3c. assessment this month, is weak, selling at 18c.

Consolidated California & Virginia, of Nevada, brought $1.35@$1.55, and Ophir 68@65c.

Sales of Phoenix, of Arizona, were made at 10@12c.

Standard Oil shares broke the record on Monday, with sales at $830, but at the close they are easier.

On December 17th two seats on the New York Stock Exchange were sold at $48,500 and $49,500, both prices being record figures. On the 18th a seat was sold at $50,000, which is the highest price on record.

It is announced that $6,000,000 preferred stock of the American Bridge Company have been introduced in the London market at $96. This company has an authorized preferred capital stock of $35,000,000 of which $30,287,000 have been issued. The New York price of the shares is $94¾ bid.

Boston. Dec. 20.

(From Our Special Correspondent.)

Boston has had a broader and generally stronger market. Part of the increased activity has gone into the industrials, but enough of it remained to make the market for coppers a good one. Amalgamated stock, however, was still off and showed little gain. The mystery of the continued sales of this stock are not yet explained and people are still discussing them and making some pretty wild conjectures. It is much the same with the Boston & Montana sales of a few weeks ago.

Reports of a settlement between the Amalgamated Company and Mr. Heinze in Montana have been freely circulated and promptly denied. Nevertheless, some people believe there is something in them.

The lake coppers have been quite freely dealt in at prices which are higher all around. A feature of the market has been the demand for some of the new stocks; Copper Range, Baltic, Mohawk, Trimountain and Mass being especial favorites. In the outside coppers Old Dominion, British Columbia and Utah were especial favorites. Santa Fe was also in some demand.

The gold stocks showed fair trading, without any special demand, Centennial-Eureka, Cochiti and Santa Ysabel receiving special attention. There is no special news in any of these.

Dominion Coal and New England Gas and Coke were rather heavy. The fact is that the insiders in these stocks do not trouble themselves about support on the stock market, and cannot be provoked into it; a fact not altogether satisfactory to some of our State Street friends.

The end of the year will doubtless see some falling off in business, but most dealers look forward to a satisfactory activity in January.

Colorado Springs. Dec. 19.

(From Our Special Correspondent.)

Announcement is made this week of the consolidation of 4 companies in the Cripple Creek District into one concern. The deal comprised the consolidation of the Doctor, the Jack-pot, the Ingham Nugget and a small company, styled the Magnet Rock. The new company is called the Doctor-Jack-pot Consolidated Mining Company, with a capitalization of $3,000,000, divided into 3,000,000 shares, par value $1. The stock is divided among the companies parties to the deal and 100,000 shares reserved in the treasury as working capital. All the properties consolidated, amounting to 72 acres located on Raven Hill, contain shipping mines, the total production from them in the last 18 months having been in excess of $4,000,000. All mining operations upon the mines of the group were practically brought to a standstill through a suit involving the apex of the Doctor-Jack-pot vein and it was the settlement of this suit which the consolidation was

arranged for. The deal is regarded as equitable.

Another matter is the action of the Colorado Springs Mining Stock Exchange in creating a trust company for the registering of stocks dealt in on the local board. The requirements are that no stock not registered shall be traded in in any of the departments of the exchange. The step was taken as a safeguard for investors, to guarantee against over-issues, etc. All but half a dozen of the companies whose shares are traded in on the local market have already listed their stocks and the remainder will soon comply with the new rule.

The shares of the Portland Company remain strong under current report that this property is the subject of negotiations looking to its sale abroad.

Salt Lake City. Dec. 15.

(From Our Special Correspondent.)

Trading in Utah mining shares records further improvement, with a growing demand from the outside, notwithstanding the midwinter holiday period. Sales for the week, as reported on the Exchange, aggregate 209,930 shares, which sold for $135,197, compared with 127,769 shares for $113,968 for the prior week.

Chief interest seems, temporarily, to be switched to the cheaper shares, though Daly-West and Lower Mammoth hold in favor, particularly the latter, which climbed to $1.38, the top sale on Wednesday. Ten days earlier it could be had around 75. The advance and active demand is said to be due to an important ore uncovering on 700-level, particulars of which are not given out. It softened to $1.20 under generous profit-taking, closing firm and in demand.

Ajax sold up to 72, bringing out large offerings till it sagged to 60, which is considerably higher than it has ruled recently. Consolidated Mercur is softer, dropping below $4. The truth of my affirmation made in September, that the maximum monthly dividend rate to be safely maintained for a considerable period will not exceed 5c. or $50,000 in all, is being proven. Daly-West remains in high favor and strong demand. A new high-water mark was made, showing no softening after the books were closed for the dividend. Nothing can be learned relative to increasing the dividend, though it is known that two directors favor paying 30c., or $45,000, per month through 1901. The usual $37,500 dividend was paid to-day.

Grand Central fluctuated considerably, due more to the trial on at Nephi than conditions at the mines. In this suit with Mammoth the testimony is all in and arguments are being made. Mammoth is soft around $2. May Day sold down to 32, then recovered, climbing above 40. Northern Light was active; the assessment must be paid by December 26th. Silver King paid the regular $75,000 dividend December 10th, and an extra Christmas present will be given the shareowners on the 24th. Yankee Consolidated climbed to 13, but softened a shade on profit-taking, though it closes in excellent form.

San Francisco. Dec. 15.

(From Our Special Correspondent.)

The mining stock market has been a little more active and somewhat firmer, though it cannot be said that any special public interest has developed.

Some quotations noted are: Consolidated California & Virginia, $1.40@$1.45; Gould & Curry, 53c.; Silver Hill, 48c.; Ophir, 64c.; Caledonia, 34c.; Mexican, 32c.; Sierra Nevada, 27c. A sale of Standard Consolidated is noted at $3.15.

According to the sworn statement filed, the following companies report having had coin on hand December 1st, 1900, with expenses paid to that date, unless otherwise stated: Alpha Consolidated, $1,193; Alta, $227, with bills payable of $750 and an assessment being collected; Andes, $222, with an assessment being collected; Belcher, $3,143, with expenses partly paid; Best & Belcher, $194, with bills payable of $1,100 and mine expenses for November unpaid and an assessment being collected; Bullion, $1,574; Caledonia (Gold Hill), $2,195, with mine expenses unpaid and an assessment being collected; Confidence, $1,886, with mine expenses unpaid; Consolidated California & Virginia, $25,642 in coin and two railroad car-loads of ore at Selby's, value unknown, and more shipments to come, with expenses all paid; Crown Point, $4,106, with mine expenses partly paid; Consolidated New York, $232; Exchequer, $406; Gould & Curry, $2,406 in coin, with net liabilities of $13,254 and concentrates to be received; Julia Consolidated, $928; Justice, $1,019, with mine expenses unpaid and an asessment being collected; Ophir, $2,497, with ore in transit; Overman, $797, with mine expenses unpaid and an assessment being collected; Potosi, $4,060, with an assessment being collected; Savage, $764, with an assessment being collected; Segregated Belcher, $1,318; Sierra Nevada, $7,248; Silver Hill, $4,555; Scorpion, $435; Syndicate, $2,251; Union Consolidated, $10,552, with an assessment being collected; Utah Consolidated, $285.

The Mexican Mining Company reports having had an indebtedness of $5,266 on December 1st, 1900. Chollar had an indebtedness of $4,667.90. Both companies are collecting assessments.

The Oil Exchange has been active and sales have been large. Some quotations noted are: San Joaquin, $9.25; Home Oil, $4.55; Twenty-eight, $2.40; El Dorado, $1.55; Caribou, 60c.; Yukon, 55c.; Four Oil, 49c.; California, 35c.

This market is unquestionably growing broader, and a disposition is shown by the public to speculate largely.

London. Dec. 4.

(From Our Special Correspondent.)

There has been a good deal of depression in South African shares this week, owing to the unrest in Cape Colony. The English and Dutch races are showing such bitterness of feeling between themselves that many people fear the outbreak of something approaching civil war. The continued resistance in the Transvaal and Orange State also adds to the general cheerlessness. During part of the week there was some briskness in Chartered and other Rhodesian companies, on the receipt of news of discoveries of coal and copper in the districts near the new Cape-to-Cairo Railway, but the spirit did not last for long, owing to the general gloom in Africans.

West Australians have not been quite so depressed this week, for the reorganization of work on the Kalgoorlie mines is progressing satisfactorily in many cases and it is hoped that production will shortly increase substantially. Hopefulness has also been infused into the market by Mr. A. E. Morgans, who has been speechifying to his shareholders and the public generally on the excellent prospects of his properties and of West Australia as a whole. The little boom in Ashanti gold-fields also progresses and quite a number of provisional syndicates have been formed for the purposes of speculation.

By far the most absorbing topic in the mining market at present, however, is the collapse of Stratton's Independence. The report by the company has just been published and it gives a general resume of the present state of affairs, though there are no details additional to what I have already reported in previous letters. The greatest regret is expressed on all hands that this mine should last for such a short time after its acquirement by the English company, and also that American mines generally should have such a setback. The initial success of Stratton's had raised quite an interest in American mining, which has for six or eight years been under a cloud in the London market, so that this collapse is particularly unfortunate.

A few weeks ago I mentioned that the celebrated Mr. Hooley had started a Siberian Goldfields Development Company to acquire concessions in Siberia. The speculation in this scheme is progressing merrily and enormous quantities of apparently vendor's shares are being sold at low prices. Hardly anything about the properties has been published, so that it amounts to gambling of the most foolish kind. Much is made of the fact that the concessions are obtained direct from the Czar, but the fact is that all mining propositions in Russia are appanages of the Crown and probably the Czar never heard personally of Mr. Hooley nor of these particular properties. Speculations of this sort are harmful to legitimate mining, but it is impossible to restrain the British public from embarking in hare-brained schemes.

Paris. Dec. 9.

(From Our Special Correspondent.)

While there is a little better tone to the market, speculation in mining stocks is still limited, and weakness has been shown in several directions.

M. Paul Leroy-Beaulieu, as president of the Union of French Holders of Stocks of Transvaal Companies, has addressed a memorial to the Chancellor of the Exchequer in London relative to the reported intentions of the British Government to make the gold mines bear a considerable share of the cost of the war. He states that the mines belong in great part to persons who are not British subjects, and whose governments have observed strictly their duties as neutrals. They have suffered by the suppression of their dividends from a war for which they are in no way responsible, and will also have to bear the cost of repairs in the mines necessary after the abandonment of their working for 15 months. As victims of the war they have rather a right to an indemnity than to be taxed. The allied governments, he remarks, intend to demand from China indemnities for the damage suffered by European industrial undertakings in that country, which are in a situation similar to that of the gold mines in the Transvaal. The war, he declares, according to official declarations, was undertaken in the political interests of the British Empire, and it is not for the mines to be charged with the cost of it. The advantages the mines will derive from a new administrative regime he characterizes as purely hypothetical, or, if any of them are real, the limited effects will only be produced a long time hence, and would be no compensation for a continuation of the suspension of dividends. The promised reduction in the working expenses he declares to be illusory, and to have been only put forward by interested parties to rally the prices of gold shares. He is loth to believe that the British Government intends to impose a system of forced labor on the blacks, and, if not, there would be no essential reduction in the cost of labor. M. Leroy-Beaulieu appeals to the sense of justice of the Chancellor of the Exchequer to take those observations into consideration.

The Union in question has been rather fertile in circulars and memorials, but it is to be doubted whether this recent one will accomplish more than those which have preceded it.

Returns of the trade of Madagascar in the first six months of 1900 show that the imports increased this year from 13,169,541 fr. to 18,609,900 fr., and the exports from 2,860,306 fr. to 4,618,623 fr., the latter sum comprising 1,288,000 fr. of gold. Satisfaction is expressed that the trade of Madagascar is now almost exclusively with France.

The increase in gold exports is notable. It implies an export of gold from the island of at least 2,500,000 fr. in 1900—and this is probably below the real production.

Azote.

DIVIDENDS.

Name of Company.	Latest Dividend. Date.	Per share.	Total.	Total to date.
†Amalgamated	Jan. 28	$1.50	$1,125,000	$9,000,600
Amalgamated, extra	Jan. 28	.50	375,000	.....
§Ala. St'l & Shipb'g, pf	Jan. 1	3.00	.....	.....
Am. Bridge, pf	Jan. 24	2.62½	918,750	.....
§American Cement	Jan. 15	.30	60,000	220,000
American Cement, ex	Jan. 15	.10	20,000	.....
†Am. Iron & Steel, pf.	Jan. 2	1.25	75,000	.....
Am. Iron & Steel, com.	Jan. 23	.25	85,000	.....
†Am. Sheet Steel, pf.	Jan. 15	1.75	.....	.....
†Am. Sm. & Ref., pf	Jan. 8	1.75	568,750	3,251,303
Am. Steel & Wire, com	Jan. 2	1.75	875,000	2,625,000
†Am. Steel & Wire, pf	Jan. 2	1.75	700,000	6,300,000
Buffalo Hump, Ida.	Jan. 2	.10	25,000	300,000
Calumet & Hecla	Dec. 28	20.00	2,000,000	73,850,000
†Cente'l Eureka, Utah	Jan. 1	.50	50,000	2,467,700
†Crucible Steel, pf	Dec. 29	1.75	426,991	426,991
§Domini'n Coal, pf, N.S	Jan. 2	4.00	120,000	.....
§Empire Steel & I., pf	Dec. 31	1.50	35,550	177,750
†General Chemical, pf	Jan. 2	1.50	121,896	641 855
*Homestake S. Dak.	Dec. 26	.50	105 000	9,403,750
Maryland Coal pf.	Dec. 31	3.00	56,550	640,869
†National Steel, pf.	Dec. 31	1.75	472,500	3,307,500
Penna. Steel, pf.	Jan. 15	1.75	26,250	157,500
†Republic, I & St. pf.	Jan. 2	1.75	355,371	2,132,225
*Rocco-Homest'e, Nev	Jan 10	.01½	4,500	13,500
†Sloss-Sheff'd S. & I., pf	Jan. 2	1.75	114 000	456,000
Tamarack, Mich	Dec. 28	10.00	600,000	7,290,000
†Washburn Wire, pf.	Jan. 1	1.75	17 500	.....

*Monthly. †Quarterly. §Semi-Annual.

ASSESSMENTS.

Name of Company.	Location.	No	Delinq.	Sale.	Amt.
Alta	Nev.	66	Dec. 6	Dec. 27	.05
Andes	Nev.	52	Dec. 14	Jan. 4	.05
Best & Belcher	Nev.	72	Dec. 7	Dec. 28	.15
Brunswick Con	Cal.	15	Dec. 26	Jan. 28	.03
Bunker Hill	Utah	...	Dec. 6	Dec. 22	.00¼
California	Cal.	...	Jan 7	.....	.02
Caledonia	Nev.	49	Dec. 18	Jan. 8	.15
Centennial	Mich	...	Apr. 12	.....	2.00
Central Mammoth	Utah	...	Dec. 15	.....	.00½
Chollar	Nev.	53	Dec. 6	Dec. 27	.10
Christmas	Utah	7	Dec. 13	Jan. 15	.00¼
Con. Imperial	Nev.	46	Dec. 28	Jan. 23	.01
Crusader Con	Utah	2	Dec. 10	Dec. 31	.00¼
Eutonia	Utah	4	Dec. 10	Dec. 28	.00½
Four Aces	Utah	...	Jan. 4	.....	.02
Golden Star	Cal.	...	Jan. 2	.....	.00¼
Gonyon	Utah	...	Dec. 1	Jan. 2	.00¼
Gould & Curry	Nev.	93	Jan. 7	Jan. 28	.10
Home	Cal.	...	Dec. 24	.....	.05
Ingot	Utah	...	Jan. 4	.....	.01
Justice	Nev.	70	Jan. 10	Jan. 31	.05
Larkin	Cal.	8	Dec. 1	Dec. 24	.02
Little Chief	Utah	5	Dec. 26	Jan. 14	.01
Lombard	Utah	...	Jan. 15	Feb. 1	.00⅛
Louise S.	Utah	...	Jan. 6	Feb. 5	.01
May Day	Cal	...	Jan. 8	.....	.05
Mexican	Nev.	65	Dec. 18	Jan. 8	.15
National Con	Cal.	...	Jan 10	.....	.05
New Erie	Utah	4	Jan. 11	Jan. 28	.00¼
Overman	Nev.	6	Dec. 11	Dec. 31	.05
Savage	Nev.	102	Dec. 21	Jan. 11	.10
Sharp	Utah	2	Jan. 3	Jan. 23	.00¼
Silver Bow	Utah	...	Jan. 10	Jan. 30	.00¼
Skagit Cumberl'd Coal	Wa'h	8	Jan. 7	Feb. 8	.01½
Snow Flake	Utah	18	Jan. 7	Jan. 28	.01
Tetro	Utah	16	Dec. 17	Jan. 5	.01
Union Con	Nev.	60	Dec. 5	Dec. 26	.15
Yellow Jacket	Nev.	...	Nov. 6	Dec. 19	.10

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Alice M	Colo	Dec. 31	Colo. Springs, Colo.
American Coal	Md.	Dec. 27	1 Broadway, N. Y. C.
Am. Steel & W.	U. S.	Feb. 21	71 Broadway, N. Y.
Arcadian Copper	Mich.	Dec. 27	Jersey City, N. J.
Bob Lee	Colo.	Jan. 7	Colo. Springs, Colo.
*Caledonia	Nev.	Dec. 27	San Francisco, Cal.
Enola	Colo.	Dec. 29	Colo. Springs, Colo.
Hale & Norcross	Nev.	Dec. 26	San Francisco, Cal.
Kennedy	Cal.	Dec. 17	San Francisco, Cal.
Princess	Colo.	Dec. 26	Colo Springs, Colo.
Providence	Utah	Jan. 4	Salt Lake City, Utah.
*Sterl'g W. Lead.	Pa.	Jan. 15	Pittsburg, Pa.
*Tintic	Utah	Jan. 11	Salt Lake City, Utah.

*Special meeting.

STOCK QUOTATIONS.

NEW YORK.

NAME OF COMPANY.	Location.	Par val.	Dec. 14. H.	Dec. 14. L.	Dec. 15. H.	Dec. 15. L.	Dec. 17. H.	Dec. 17. L.	Dec. 18. H.	Dec. 18. L.	Dec. 19. H.	Dec. 19. L.	Dec. 20. H.	Dec. 20. L.	Sales.
Alamo	Colo.	1	.12½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000
Alice	Mont.	25	.....	.....	.....	.....	.....	.....	.40	.....	.....	.....	.....	.....	100
Amalgamated c.	Mont.	100	91.75	89.38	90.38	89.75	93.75	89.75	95.00	92.63	95.50	93.75	92.50	.....	89,455
Anaconda, c	Mont.	25	47.88	46.88	47.75	47.00	49.25	47.00	49.25	48.00	49.50	48.00	48.50	.....	14,955
Anaconda Gold.	Colo.	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Argentum-Jun.	Colo.	3	.....	.....	.....	.....	.38	.....	.....	.....	.38	.....	.....	.....	1,100
Belcher	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British Col. Cop.	B. C.	5	20.50	20.00	21.25	20.00	20.25	20.00	21.00	20.63	21.25	21.00	21.25	21.00	6,005
Brunswick Cons.	Cal.	1	.....	.....	.18	.....	.....	.....	.18	.....	.....	.....	.....	.....	400
Cable Cons.	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.05	.....	.....	.....	1,000
Catalpa	Colo.	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chollar	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chrysolite	Colo.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Comstock T.	Nev.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" bonds	Nev.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Cal. & Va.	Nev.	2½	.....	.....	1.50	.....	1.55	.....	.....	.....	1.55	.....	.....	.....	900
Creede & C. C.	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crescent	Colo.	10	.....	.....	.....	.....	.....	.....	.....	.....	.13	.....	.....	.....	1,000
Cripple Cr. Con	Colo.	1	.....	.....	.....	.....	.13	.....	.13	.....	.....	.....	.....	.....	2,000
Crown Point	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Deadwood	Colo.	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elkton	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Father de Smet.	S. Dak	100	.....	.....	.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Garfield Con	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Dollar	Colo.	1	.23	.....	.....	.....	.23	.....	.....	.....	.....	.....	.....	.....	600
Gould & Curry	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hale & Norcross	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Homestake	S. Dak	100	80.00	.....	.....	.....	75.00	.....	.....	.....	.....	.....	.....	.....	125
Horn Silver	Utah.	20	.....	.....	1.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Iron Silver	Colo.	20	.75	.....	.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	400
Isabella	Colo.	1	.....	.....	.70	.....	.72	.....	.70	.....	.69	.....	.....	.....	1,400
Jack Pot	Colo.	1	.....	.....	.75	.74	.....	.....	.....	.....	.74	.....	.....	.....	1,500
Lacrosse	Colo.	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leadville	Colo.	10	.06	.....	.....	.....	.....	.....	.....	.....	.07	.....	.....	.....	1,600
Little Chief	Colo.	1	.....	.....	.16	.....	.....	.....	.15	.....	.....	.....	.....	.....	600
Mollie Gibson	Colo.	5	.26	.....	.....	.....	.25	.....	.24	.....	.....	.....	.....	.....	1,500
Moulton	Mont.	25	.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Mt. Rosa	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ontario	Utah.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ophir	Nev.	3	.....	.....	.....	.....	.68	.....	.....	.....	.62	.....	.....	.....	700
Pharmacist	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phoenix	Ariz.	1	.....	.....	.....	.....	.....	.....	.12	.10	.11	.....	.....	.....	2,000
Plymouth	Cal.	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portland	Colo.	1	.....	.....	3.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	500
Potosi	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicksilver	Cal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicksilver pf.	Cal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Savage	Nev.	2½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra Nevada	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Small Hopes	Colo.	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard Con.	Cal.	10	3.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20
Syndicate	Cal.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tenn. Copper	Tenn.	25	19.00	17.00	19.00	17.00	17.00	16.50	18.00	17.75	19.00	17.00	18.50	17.50	100
Union Copper	N. C.	10	5.00	4.75	5.25	5.13	5.75	5.50	5.75	5.53	5.63	5.38	5.50	5.25	2,000
Work	Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yellow Jacket	Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

COAL AND INDUSTRIAL STOCKS.

Am. Sm. & Ref.	.....	$100	55¼	52¼	53½	51¼	55⅛	54	55	54	53¾	54¼	55	.....	139180
" " " " pf	.....	100	97	95¾	98½	97	98	96½	97	95	98	97	98	.....	8,805
Am. S. & W. Con	.....	100	44⅞	42⅜	45⅛	44⅜	†43⅞	43	44¾	42¾	44⅜	43⅛	43⅛	.....	63,050
" " " pf'r n	.....	100	87⅞	87	88⅛	88	†87¼	86½	87¼	87⅛	88⅜	87⅛	87¼	.....	11,650
Col. Fuel & I.	Colo.	100	51½	50¼	52¾	51⅞	53⅜	52½	54½	52⅜	54⅜	52¾	53⅞	.....	28,430
Col. & H. C. & I.	"	100	16½	.....	.....	.....	16½	16	16	.....	15	14⅝	14¾	.....	1,100
Federal Steel	.....	100	52⅝	51¼	53½	52¾	54	53	54⅞	53¼	54⅞	53½	53½	.....	109135
" " pf.	.....	100	76¼	76⅜	78½	77½	79	78¼	79	78½	79½	78½	78½	.....	14,590
Fleming'n C. & C	W. Va.	100	19	.....	20	18	20	18	20	18	20	18	20	18	.....
National Lead	.....	100	20¾	20	21	20¾	21⅞	21	21¾	21½	21	.....	20½	.....	4,625
" " pf.	.....	100	93⅞	92½	93½	.....	93½	.....	95	.....	.....	.....	93⅜	.....	1,150
National Salt	.....	100	.....	.....	.....	.....	89½	89	41½	41	42	41	44½	.....	1,800
" " pf.	.....	100	.....	.....	.....	.....	.....	.....	72	.....	73½	.....	.....	.....	200
National Tube	.....	100	62	61½	62	61	63¾	61¾	62¾	62	62¾	62	62	.....	9,450
" " pf.	.....	100	103¾	104½	103½	103¼	104¾	.....	104½	.....	104	103	103½	.....	4,426
Republic I. & S.	.....	100	16	.....	16¾	15⅜	17	16¼	17	16¼	17	16	16½	.....	7,906
" " pf.	.....	100	†63¾	63½	64¼	63¼	65	64½	65	64⅜	64½	64	63¾	.....	4,580
Sloss-Shef	.....	100	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	.....	200
" " pf.	.....	100	.....	.....	.....	.....	70½	69½	.....	.....	70½	70¼	69½	.....	1,000
Stan. Oil of N. J.	.....	100	810	802	815	812	827	824	824	824	824	819	822	320	.....
Tenn C., I. & R.R.	.....	100	62¼	58¾	62⅜	60½	63	61¼	65	61½	64½	63	64	.....	50,935
Va. Coal & C.	Va.	100	3	3	5	3	5	3	5	3	5	3	.....	.....	260

†Ex-Dividend. Total sales, 643,967.

SAN FRANCISCO, CAL.

NAME OF COMPANY.	Location.	Par value.	Dec. 13.	Dec. 14.	Dec. 15.	Dec. 17.	Dec. 18.	Dec. 19.
Belcher	Nev.	$3.00	.14	.14	.14	.14	.14	.14
Best & Belcher	"	3.00	.25	.27	.27	.27	.26	.28
Caledonia	"	3.00	.32	.47	.47	.47	.47	.45
Challenge Con	"	3.00	.20	.20	.21	.21	.20	.19
Chollar	"	3.00	.14	.14	.15	.15	.15	.13
Confidence	"	3.00	.55	.59	.55	.55	.55	.50
Con. California & Virginia	"	2.50	1.40	1.45	1.45	1.45	1.45	1.50
Crown Point	"	3.00	.11	.11	.11	.11	.11	.10
Gould & Curry	"	3.00	.50	.52	.52	.51	.45	.36
Hale & Norcross	"	3.00	.19	.19	.20	.20	.20	.18
Justice	"	2.00	.03	.02	.03	.03	.03	.03
Mexican	"	3.00	.20	.32	.31	.33	.32	.30
Occidental Con	"	3.00	.04	.04	.04	.04	.04	.04
Ophir	"	3.00	.63	.66	.68	.66	.61	.59
Potosi	"	3.00	.12	.12	.12	.13	.12	.11
Savage	"	2.50	.06	.06	.06	.17	.17	.15
Sierra Nevada	"	3.00	.27	.29	.30	.29	.28	.26
Standard Con	Cal.	10.00	3.05	3.05	3.20	3.00	3.10	3.10
Union Con	Nev.	2.50	.21	.22	.22	.22	.22	.20
Utah Con	"	1.00	.05	.05	.....	.....	.05	.05
Yellow Jacket	"	3.00	.21	.21	.21	.21	.19	.18

CALIFORNIA OIL STOCKS.*

Name of Company.	No. of shares.	Par Val.	Nov. 23. H.	Nov. 23. L.	Nov. 24. H.	Nov. 24. L.	Nov. 26. H.	Nov. 26. L.	Nov. 27. H.	Nov. 27. L.	†Nov. 29. H.	†Nov. 29. L.	Nov. 30. H.	Nov. 30. L.	Sales
Blue Goose	5,000	$100	5.50	2.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buckhorn	20,000	10.00	3.75	3.50	.....	.....	3.50	.....	3.50	.....	.....	.....	.....	.....	.....
Cal. Standard	500,000	1.00	.33	.30	.....	.....	.34	.30	.36	.32	.....	.....	.34	.30	10,000
Caribou	100,000	1.00	.53	.49	.....	.....	.65	.49	.65	.59	.....	.....	.50	.29	4,500
El Dorado	100,000	1.00	2.30	2.20	.....	.....	.....	.....	2.50	2.20	.....	.....	2.20	2.05	.....
Four	300,000	1.00	.41	.40	.....	.....	.41	.40	.42	.40	.....	.....	.45	.40	1,550
Hanford	2,000	10.00	125	115	.....	.....	120	115	120	115	.....	.....	118	115	20
Hanf'd F. & K.	.....	.....	.....	.....	.....	.....	.30	.....	.28	.20	.....	.....	.21	.....	2,300
Home	100,000	1.00	4.45	4.35	.....	.....	4.45	4.35	.....	.....	.....	.....	4.50	4.40	800
Homestake	10,000	10.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.50	10.50	.....
Independence	600,000	1.00	.22	.21	.....	.....	.22	.....	.22	.....	.....	.....	.22	.20	2,750
Kern	100,000	1.00	.....	.....	.....	.....	9.25	8.75	9.50	9.00	.....	.....	.....	.....	25
Kern River	20,000	5.00	18.25	16.75	.....	.....	18.00	17.00	18.00	.....	.....	.....	.....	.....	20
McKittrick	60,000	1.00	.70	.65	.....	.....	.63	.57	.60	.55	.....	.....	.48	.40	4,010
Mo'arch of Ari	500,000	1.00	.42	.36	.....	.....	.45	.41	.45	.41	.....	.....	.41	.....	250
Monte Cristo	500,000	1.00	1.43	1.35	.....	.....	1.45	1.38	1.45	1.35	.....	.....	1.50	1.40	1,700
Oil City Petrol	5,000	100	85.00	80.00	.....	.....	85.00	.....	85.00	.....	.....	.....	85.00	.....	.....
Petrol. Center	500,000	1.00	.30	.17	.....	.....	.27	.25	.25	.15	.....	.....	.24	.20	24,947
Rex	100,000	5.00	1.00	.90	.....	.....	1.00	.....	1.00	.85	.....	.....	.85	.....	.....
San Joaquin	100,000	1.00	9.50	9.25	.....	.....	9.63	9.25	9.38	9.25	.....	.....	9.50	9.38	405
Sterling	250,000	1.00	2.75	2.58	.....	.....	2.75	2.65	2.65	2.60	.....	.....	2.65	2.60	1,250
Sunset (Orig.)	100,000	5.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Twenty-eight	60,000	10.00	2.50	2.45	.....	.....	2.50	2.45	2.50	2.40	.....	.....	2.45	2.40	900
Yukon	100,000	2.50	.70	.62	.....	.....	.64	.61	.63	.60	.....	.....	.60	.57	5,200

* Producers' Oil Exchange, San Francisco. Total sales, 60,727 shares. †Holiday.

BOSTON, MASS.†

NAME OF COMPANY.	Par val.	Shares issued.	Dec. 13. H.	Dec. 13. L.	Dec. 14. H.	Dec. 14. L.	Dec. 15. H.	Dec. 15. L.	Dec. 17. H.	Dec. 17. L.	Dec. 18. H.	Dec. 18. L.	Dec. 19. H.	Dec. 19. L.	Sales
Adventure Con.	$25	100,000	.....	.....	7.00	6.50	7.00	.....	7.00	.....	8.00	7.25	8.00	.....	2,768
Aetna Con., g.	5	100,000	.85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Allouez	25	80,000	2.50	2.25	.....	.....	2.50	.....	2.50	.....	.....	.....	2.25	.....	360
Amal. Copper	100	750,000	92.25	91.38	91.75	90.38	91.00	90.00	94.00	89.88	95.00	93.00	95.00	93.75	15,642
Am. Z. L. & Sm.	25	60,000	.....	.....	.....	.....	13.00	.....	.....	.....	.....	.....	13.00	.....	200
Anaconda	25	1200,000	.....	.....	.....	.....	.....	.....	47.00	.....	.....	.....	.....	.....	10
Arcadian, c	25	150,000	.....	.....	21.75	.....	22.00	21.00	22.63	21.50	23.25	22.00	23.00	.....	1,456
Arnold	25	60,000	5.00	.....	5.00	.....	5.00	.....	5.25	5.00	5.00	.....	5.50	5.00	1,080
Ashbed	25	40,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic, c	25	40,000	.....	.....	27.00	26.50	26.50	.....	27.00	.....	27.00	.....	.....	.....	200
Baltic, c	25	100,000	29.25	28.50	30.00	29.00	29.50	.....	30.50	29.50	31.00	29.75	32.00	31.00	5,995
Bingham, c. g.	10	190,000	.....	.....	14.00	13.50	.....	.....	15.75	14.00	15.50	15.00	15.75	15.00	8,453
Bonanza Dev.	10	300,000	.....	.....	1.25	.....	.....	.....	1.28	.....	.....	.....	.....	.....	320
Boston, g	10	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston & Mont.	25	150,000	327	325	327	325	327	325	328	326	333	328	330	327	1,318
Breece	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British Columbia	5	200,000	20.13	.....	.....	.....	.....	.....	20.00	.....	20.75	20.50	21.75	20.00	1,253
Butte & Bost., c.	10	200,000	81.50	80.00	80.00	79.00	82.00	81.00	86.00	82.00	87.00	.....	87.50	85.00	3,312
Cal. & Hecla, c.	25	100,000	800	.....	.....	.....	.....	.....	805	.....	820	805	810	.....	53
Centennial, c.	25	90,000	21.00	20.50	20.50	20.25	21.00	20.88	22.50	20.75	22.88	22.25	23.00	22.00	5,825
Cent'l Eureka	25	100,000	.....	.....	24.00	23.00	.....	.....	23.25	23.00	23.50	.....	24.50	23.50	462
Cochiti, g.	10	175,000	9.25	9.00	10.38	9.50	10.50	10.00	10.38	10.00	10.38	10.00	10.25	10.00	8,101
Ctl. Z. L. & M. & S.	10	140,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.25	1.88	250
Copper Range	25	100,000	27.25	26.50	29.50	27.50	29.50	29.00	29.50	29.00	29.25	29.00	30.75	30.00	3,805
Dominion Coal	100	150,000	.....	.....	39.00	38.00	38.50	.....	.....	.....	38.25	37.75	37.50	.....	1,287
do. pref.	100	150,000	.....	.....	113	.....	*113	109	.....	.....	109	108½	109	108¾	465
Elm River	12	100,000	3.75	.....	3.75	.....	4.00	.....	.....	.....	4.00	.....	5.75	4.00	6,174
Franklin, c.	25	100,000	15.50	.....	.....	.....	15.00	.....	15.50	.....	15.50	.....	15.50	.....	200
I. Royal Con., c.	25	100,000	36.50	35.50	35.75	35.00	37.00	36.50	38.00	37.00	38.75	.....	39.50	38.13	2,285
Mass Con.	25	100,000	18.88	18.50	13.50	13.13	14.50	13.25	14.00	13.25	14.75	14.00	14.00	.....	1,355
Mayflower	25	100,000	.....	.....	2.00	.....	.....	.....	2.50	2.00	2.38	.....	.....	.....	850
Merced	15	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.00	.....	25
Michigan	25	100,000	.....	.....	.....	.....	4.00	.....	4.50	4.13	4.50	.....	4.50	.....	645
Mohawk, c	25	100,000	23.00	.....	22.50	22.00	22.50	22.00	23.00	22.50	22.75	22.00	23.50	23.00	916
Mont. C. & C.	25	200,000	6.50	6.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
N. A. G. Dreg.	10	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N.E. Gas & Coke	100	160,000	12.25	12.00	12.25	11.75	12.00	11.50	11.50	11.25	11.25	11.00	11.50	11.00	925
Old Colony	25	100,000	.....	.....	.....	.....	.....	.....	3.50	.....	.....	.....	.....	.....	210
Old Dominion, c	25	150,000	28.00	.....	27.75	27.50	28.00	.....	30.50	28.00	31.25	30.50	31.25	30.00	7,026
Osceola, c.	25	93,000	73.00	.....	.....	.....	73.50	72.50	74.00	73.00	74.00	73.00	74.00	73.75	1,948
Parrot, s c.	10	229,850	48.00	47.63	47.75	47.50	48.00	47.75	49.50	47.75	50.75	49.50	50.00	49.50	2,768
Quincy, c.	25	100,000	170	.....	170	168½	.....	.....	.....	.....	.....	.....	1.72	.....	64
Rhode Island	25	100,000	.....	.....	.....	.....	.....	.....	3.50	.....	.....	.....	3.50	.....	360
Santa Fe, g. c.	10	250,000	6.50	6.25	6.00	.....	.....	.....	6.75	.....	.....	.....	7.00	6.75	880
Santa Ysabel	5	130,000	2.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	150
Tamarack, c.	25	60,000	280	.....	285	.....	285	.....	284	.....	285	285	285	283	82
Tecumseh	25	80,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trimountain	25	100,000	18.88	17.75	19.00	18.50	19.00	18.75	19.50	18.75	20.75	19.00	22.00	20.75	10,292
Union C. L.	25	80,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
UnitedStatesMg.	25	250,000	.....	.....	.....	.....	.....	.....	9.88	.....	.....	.....	10.00	9.75	1,595
Utah Con., g. c.	5	300,000	34.00	33.50	34.25	33.38	34.00	33.75	35.00	33.75	34.75	33.50	34.50	33.50	6,130
Victoria	25	100,000	.....	.....	.....	.....	2.50	.....	.....	.....	2.63	.....	3.00	.....	195
Washington	25	60,000	.....	.....	.50	.50	.....	.....	.....	.....	.60	.....	.....	.....	200
Winona, c.	25	100,000	.....	.....	3.25	3.00	3.50	.....	.....	.....	3.75	.....	3.88	3.75	425
Wolverine, c.	25	60,000	46.00	45.50	45.50	.....	46.00	45.50	46.50	45.50	46.75	46.00	46.88	46.00	742
Wyandot	25	100,000	.....	.....	.....	.....	.....	.....	1.13	.....	.....	.....	1.13	.....	250

†Official quotations Boston Stock Exchange. Total sales, 100,267 shares. *Ex-Dividend.

PHILADELPHIA, PA.§

NAME OF COMPANY.	L'cation.	Par Val.	Dec. 13. H.	Dec. 13. L.	Dec. 14. H.	Dec. 14. L.	Dec. 15. H.	Dec. 15. L.	Dec. 17. H.	Dec. 17. L.	Dec. 18. H.	Dec. 18. L.	Dec. 19. H.	Dec. 19. L.	Sales
Am. Alkali	.....	$50	1.75	1.50	1.75	1.50	1.88	1.75	2.13	1.88	2.38	2.25	2.38	.....	37,732
Am. Cement	.....	10	.....	.....	.....	.....	8.50	.....	8.25	.....	8.25	.....	8.38	.....	1,050
Bethlehem Iron	Pa.	50	.....	.....	59.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	20
Bethlehem Steel	"	50	17.88	.....	17.75	17.50	.....	.....	18.00	.....	.....	.....	18.00	17.88	535
Cambria Iron	"	50	.....	.....	.....	.....	45.25	45.00	.....	.....	45.25	.....	45.25	45.00	140
Cambria Steel	"	50	20.00	19.88	20.50	19.75	20.38	20.25	20.25	.....	20.38	20.25	20.75	20.38	8,954
Susq. I. & S.	"	10	2.38	.....	2.50	.....	2.50	.....	2.38	2.25	2.38	2.25	2.50	2.38	2,7 8
United Gas I.	"	50	124	.....	124⅜	124	124⅜	124⅛	124¼	124¼	124⅜	124¼	125	124⅜	3,038

Total shares sold, 54,173. § Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia.

SALT LAKE CITY, UTAH. Dec. 15

STOCKS.	Shares.	Par val.	Bid.	Asked.	STOCKS.	Shares.	Par val.	Bid.	Asked
Ajax	300,000	$10	$0.57½	$0.61	Horn Silver	400,000	$25	$1.15	.....
Alice	400,000	25	.31½	.....	Joe Bowers	400,000	1	.03	.....
Bullion-Beck & Ch.	100,000	10	3.80	4.35	Joe Bowers Ext'n	700,000	¼	.....	.....
Centennial Eureka	200,000	25	27.00	.....	Little Pittsburg	400,000	5	.....	$9.01
Chloride Point	500,000	1	.03½	.03	Lower Mammoth	150,000	1	1.19¾	1.19⅞
Cons. Mercur	100,000	5	3.90	3.95	Mammoth	400,000	5	1.96	2.00
Daisy	500,000	3	.01½	.01⅝	May Day	400,000	¾	.44	.44¼
Dalton	500,000	5	.09½	.10	Northern Light	400,000	5	.00⅞	.01
Dalton & Lark	2,500,000	1	.....	.06	Ontario	150,000	100	5.75	.....
Daly	150,000	20	1.38	1.46	Sacramento	1,000,000	5	.38	.39
Daly-West	150,000	20	26.00	26.77	Showers Cons.	400,000	5	.10	.14
Dexter	200,000	5	1.02	1.35	Silver King	150,000	20	69.50	.....

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.‡

Name of Company.	Par val.	Dec. 8. B.	Dec. 8. A.	Dec. 10. B.	Dec. 10. A.	Dec. 11. B.	Dec. 11. A.	Dec. 12. B.	Dec. 12. A.	Dec. 13. B.	Dec. 13. A.	Dec. 14. B.	Dec. 14. A.	Sales.
Acacia	$1	.37	.39	.35½	.36	.35	.35¾	.35	.35¼	.34	.34½	.....	.33¾	39,000
Alamo	1	.11¾	.12	.11¼	.12	.11¼	.12	.11¼	.12	.11¼	.12	.11	.12	8,000
Am. Con	1	.06½	.07	.06	.07	.....	.07	.06	.06¾	.06⅝	.06¾	.06⅜	.06⅝	8,000
Anaconda	1	.47¾	.48	.48	.49	.51	.52	.50¾	.51	.50	.50⅛	.48⅛	.49⅞	64,100
Anchor	1	.....	.....	.....	.03⅛	.02¾	.03⅛	.02¾	.03	.02¾	.....	.02¾	.03	4,000
Anchoria L	1	.75	.....	.75	.....	.75	.....	.75	.....	.75	.....	.75	.....	.....
Antelope	1	.02½	.02¾	.02½	.02¾	.02½	.02¾	.02½	.03	.02¼	.02½	.02¼	.02⅝	1,000
Aola	1	.04⅜	.05¼	.....	.....	.....	.05½	.....	.05¼	.....	.05	.....	.05	.....
Arcadian	1	.....	.05½	.05	.....	.....	.....	.04	.05	.....	.05	.04⅜	.05	.....
Arg'ntum J	1	.21	.27½	.26	.27½	.25½	.26⅜	.25⅛	.26	.26¼	.....	.26½	.....	12,500
Banner	1	.03⅝	.04¼	.03⅜	.03¾	.....	.03¾	.....	.03¾	.....	.03¾	.....	.03¾	.....
Battle Mt.C	1	.19	.19¾	.19	.20	.20¼	.21	.22	.24	.21	.21½	.21	.21½	20,600
Ben Hur	1	.06	.....	.06	.....	.....	.....	.....	.07¾	.06	.07	.....	.....	.....
Black Bell	1	.12	.16	.12	.13½	.12	.12¼	.12	.14	.12	.13¼	.12	.14	.....
Blue Bell	1	.14	.14½	.14⅜	.14⅝	.14⅜	.14⅝	.14⅜	.14⅞	.14¼	.14⅝	.....	.14⅜	18,000
Bob Lee	1	.04⅜	.04⅝	.04¼	.04⅝	.04¼	.04⅝	.04	.04⅜	.04⅛	.04⅜	.04	.04⅛	.....
Buckhorn	1	.05	.05½	.....	.05¼	.....	.05	.04⅞	.05	.....	.....	.04⅞	.05¼	3,000
Cadillac	1	.02¼	.02¾	.02⅜	.02¾	.02⅜	.02⅝	.02⅜	.02¾	.02¼	.02⅝	.02¼	.02⅜	7,000
Central C'n	1	.....	.....	.07	.07¾	.07¼	.07⅝	.07⅜	.07⅝	.07¼	.07½	.06¾	.07⅛	22,000
Champion	1	.06¾	.07¼	.06¾	.....	.06¾	.07	.06¾	.07	.06¾	.07	.06⅝	.07	7,500
Chicolo	1	.02¼	.....	.02⅛	.02¾	.02½	.02⅝	.02⅝	.02⅞	.02⅝	.02⅞	.02⅝	.02⅞	10,000
C. K. & N.	1	.02½	.02¾	.02⅛	.03	.02⅛	.....	.02½	.02¾	.02½	.02⅝	.02⅜	.02½	4,000
C. C.Col'bia	1	.11⅜	.11¾	.11	.11¾	.11	.11⅜	.11⅜	.11⅝	.11⅜	.11⅝	.11⅜	.12	34,000
C. C. G. Ext	1	.14	.15¼	.14⅜	.14⅞	.13⅝	.14½	.14	.14⅝	.14	.14½	.14⅜	.15	2,500
C. C. & Man	1	.10	.10⅛	.09⅞	.10	.09½	.09⅞	.09⅝	.09⅞	.09⅝	.09¾	.09⅜	.09⅝	19,500
Copper Mt.	1	.03½	.03⅝	.03⅜	.03⅝	.03½	.03⅝	.03¼	.03⅜	.03⅜	.03⅝	.....	.....	10,000
Creede& CC	1	.12	.14	.....	.13	.10	.....	.....	.14	.11	.13	.....	.13½	.....
C. C. Con	1	.13½	.....	.13¼	.13⅝	.13¼	.14	.13¼	.13⅝	.13⅛	.13½	.13¼	.13⅝	32,000
Dante	1	.08¾	.09	.08⅞	.09¼	.08¾	.09	.09	.09⅛	.08⅞	.09	.08¾	.09⅛	17,000
Des Moines	1	.....	.....	.05¾	.....	.05¾	.....	.05¾	.06¼	.05½	.....	.05¾	.....	1,000
Eclipse	1	.09	.09¼	.09	.....	.09¼	.09⅜	.09	.09⅜	.09⅛	.09¾	.09⅛	.09⅝	42,000
Elkton Con	1	1.87½	1.88	1.89¼	1.90	1.86	1.87	1.85½	1.86	1.85⅝	1.86	1.85	1.85¼	30,295
El Paso G.	1	.42	.42½	.42	.42½	.42	.42½	.42	.42½	.42	.42½	.41½	.42	16,000
Enterprise	1	.14	.....	.14	.15	.14	.18	.16½	.17¼	.16	.18	.....	.....	2,500
F.Rawlings	1	.17	.21	.....	.....	.17	.20	.....	.20	.....	.....	.....	.....	2,000
Findley	1	.12⅝	.13	.12⅝	.....	.12½	.....	.12	.13	.12	.12¾	.12	.13⅛	5,000
Garf. Conn.	1	.07	.....	.....	.....	.07	.....	.07	.....	.07	.....	.07	.....	.....
Golden Fl.	1	.22	.25	.21	.24	.22	.25	.22	.25	.22	.25	.22⅜	.25	500
Gold Hill	1	.03¼	.03¾	.03	.03¾	.03	.03⅜	.03	.03⅜	.03	.03⅜	.04	.03⅝	20,000
Gold Sov'n.	1	.08½	.08¾	.08⅜	.....	.08¾	.09	.08⅛	.08⅜	.08	.08⅞	.08	.08⅜	15,000
Hayden	1	.02	.02¼	.02	.02½	.02	.02⅝	.02	.02⅝	.02	.02⅝	.02	.02⅜	5,000
Humboldt	1	.03⅝	.03⅞	.....	.04	.03⅜	.04	.03	.03¾	.03¾	.03⅞	.....	.....	10,000
Ida May	1	.23½	.24½	.23¾	.25	.....	.25	.24	.25	.24	.25	.23½	.24¼	1,000
Ing. Con.	½	.23¾	.23¾	.23⅜	.23⅝	.21	.21¾	.22⅞	.24	.21	.22¼	.22	.23	65,500
Ironclad	1	.05½	.05⅝	.05¼	.05¾	.05¼	.05⅝	.05¼	.06	.05½	.....	.05¼	.06	7,000
Isabella	1	.67½	.68	.68¼	.67½	.68	.68¾	.....	.....	.69	.69¼	.68½	.69	122,450
Jack Pot	1	.63¾	.63¾	.73½	.74	.72⅜	.72¾	.72½	.....	.72¾	.75	.74½	.75	92,600
Josephine	1	.01¾	.02	.01⅞	.02	.....	.02	.....	.02	.....	.01⅞	.01½	.02	11,000
Key West	1	.02¾	.02⅞	.02⅞	.03	.03¼	.03	.....	.....	.02⅝	.03	.02⅝	.03	7,000
Lexington	1	.13⅞	.14	.13⅜	.13⅞	.13⅜	.13¾	.13⅜	.13⅝	.13⅜	.13⅝	.13⅜	.13⅝	20,000
Magnet R.	1	.....	.04¼	.03¼	.....	.04	.04¼	.04⅝	.04⅜	.04	.04⅜	.....	.03⅞	5,000
Margaret	1	.02	.02⅛	.02	.02¼	.02	.02¼	.02	.02⅛	.02	.02⅛	.02	.02¼	1,000
Margery	1	.02⅝	.03⅛	.02¾	.03¼	.02	.03⅛	.02¾	.03	.02	.03	.....	.03¼	.....
Matoa	1	.17⅛	.....	.17⅛	.18	.17⅛	.....	.17⅛	.....	.17½	.....	.17⅛	.....	4,500
Midway	1	.04⅛	.05	.04⅛	.05	.04⅛	.04⅜	.04⅛	.04⅜	.04⅛	.04⅜	.04⅛	.04⅞	7,000
M. J. T	1	.04¼	.04⅜	.04	.04⅜	.03⅝	.03⅞	.03⅞	.04	.03⅞	.04	.03⅞	.04	9,000
Mobile	1	.03⅜	.03⅝	.03	.03⅝	.03⅜	.03⅝	.03¼	.03⅝	.03¼	.03⅝	.03⅜	.03⅝	10,500
Moll.Dwyer	1	.05¼	.05½	.05⅜	.05½	.05¾	.05⅝	.05⅜	.05⅝	.05⅜	.05½	.05¼	.05⅝	38,000
Mollie Gib.	1	.22	.25	.22	.26	.22	.26	.22	.26	.22	.25	.22	.25	.....
Monarch	1	.10½	.10⅝	.13⅝	.14	.10¼	.10¾	.09⅞	.10⅜	.09⅞	.10¼	.....	.....	23,000
Montreal	1	.04	.05	.04	.05	.....	.05	.04	.05	.04	.05	.04	.05	.....
Moon-A'c'r	1	.30	.....	.....	.....	.....	.32	.....	.15⅜	.....	.15	.28	.11⅜	2,000
Morning S.	1	.04	.04¼	.....	.04⅜	.03½	.04⅛	.03¾	.04	.03	.03⅞	.03½	.03⅞	.....
Mtn.Beauty	1	.08¾	.08⅞	.09	.09¼	.08⅜	.08¾	.08⅜	.09⅜	.08⅜	.08⅝	.08⅛	.08¾	22,000
Mt. Rosa	1	.49	.50	.47½	.47⅝	.47	.50	.47½	.50	.47	.50	.....	.50	2,100
National	1	.09¾	.09¾	.09½	.09⅝	.09⅜	.09½	.09½	.09⅝	.09⅜	.09⅝	.09⅜	.09½	50,000
Nellie V.	1	.08	.08½	.07⅞	.08⅛	.....	.02	.07⅛	.07⅝	.07⅜	.07¾	.....	.07¾	6,000
New Haven	1	.08⅝	.08½	.08⅝	.08¾	.08⅜	.08⅞	.08⅛	.08¾	.08⅛	.08½	.08¼	.08¾	24,500
Olive B'uch	1	.04½	.05	.04⅜	.....	.04⅜	.04¾	.04⅜	.05	.04¼	.04⅝	.04⅛	.04¾	5,000
Ophir	1	.25	.30	.27	.30	.29¼	.....	.28	.30	.30	.31	.30	.35	2,000
Orioie	1	.04	.....	.04⅛	.04¼	.04	.04⅛	.04	.04¼	.03¾	.04¼	.03¾	.04¼	3,000
Orphan	1	.10	.....	.12⅝	.14	.13	.14	.13⅜	.....	.10	.15¼	.10	.....	35,900
Pelican	1	.02⅛	.02¾	.02	.02¾	.02	.02¾	.02	.03	.01⅞	.02	.01⅞	.02	16,000
Pharmacist	1	.09⅝	.09⅞	.09¼	.09¾	.09	.09½	.09¼	.09⅝	.09¼	.09¾	.09¼	.09⅝	9,000
Pilgrim	1	.07¼	.07¾	.07½	.08	.07¾	.08	.07½	.08	.07½	.08¼	.07⅞	.08¼	1,500
Pinnacle	1	.17	.19	.17	.18	.....	.18	.17⅛	.17½	.17¼	.17⅝	.....	.17½	5,000
Portland	1	3.20	3.25	3.20	3.25	3.22	3.28	3.25	3.28	3.27	3.32	3.25	3.32	9,300
Prince Alb.	1	.05½	.05¾	.05⅝	.05¾	.05½	.05¾	.05⅝	.05¾	.05½	.05⅝	.05¾	.....	29,000
Princess	1	.05	.05¼	.05	.05¼	.05	.05½	.05	.05⅜	.05	.05⅜	.05	.05½	7,000
Progress	1	.05⅜	.05⅝	.05½	.06	.05½	.05¾	.05¼	.05¾	.....	.06	.05½	.06	2,500
Pythias	1	.04¼	.04½	.04¼	.04⅜	.04⅛	.04⅝	.04¼	.04⅝	.04	.04⅝	.04¼	.04⅜	20,000
Republic	1	.03⅜	.03½	.03⅜	.03⅝	.07¼	.07⅝	.08⅜	.08⅝	.08	.08⅝	.07⅜	.08	145,500
Rob't Burns	1	.04⅝	.05	.05	.05⅛	.04⅜	.05⅛	.05	.05⅛	.04⅜	.05⅜	.04⅝	.05	8,000
Rose Maud	1	.08¼	.08⅜	.05⅜	.05¾	.08¼	.08⅝	.08¼	.08⅝	.08¼	.08¾	.08⅜	.08⅝	14,000
Rose Nicol	1	.10⅛	.....	.....	.....	.10¾	.11⅛	.10⅜	.11	.10⅜	.11	.10	.10⅜	3,000
Silver Gold	1	.01⅜	.....	.01⅞	.02⅛	.01¾	.02	.01⅞	.02	.01¾	.01⅞	.01¾	.02	7,000
Theresa	1	.....	.....	.....	.07½	.....	.07½	.....	.07½	.06	.07½	.....	.....	2,000
Trachyte	1	.05	.05½	.04⅞	.05	.04¾	.05⅛	.04½	.05⅛	.04¾	.05	.04⅜	.05	3,500
Uncle Sam	1	.04	.04⅜	.04	.04¾	.04	.04⅜	.04¼	.04⅜	.04	.04¼	.04¼	.04¼	3,000
Union	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Va. M	1	.....	.....	.....	.....	.07	.09	.07½	.08	.07¾	.08	.07⅜	.08	.....
Vindicator	1	1.29	1.35	1.30	1.34	.....	1.35	.....	1.35	.....	1.35	.....	1.35	300
Work	1	.....	.24	.21¼	.32	.22	.22½	.21⅝	.22	.21	.22	.21⅜	.21¾	18,000
Zenobia	1	.12	.....	.12	.....	.12	.....	.12	.....	.12	.....	.12	.....	.....

Colorado Springs Mining Stock Exchange. Total sales, 1,392,445 shares.

MONTREAL, CANADA.*

Name of Company.	Par val.	Week, Dec. 17. H.	L.	Sales.	Name of Company.	Par val.	Week, Dec. 17. H.	L.	Sales.
Big Three	$1	.02	.01	2,500	Montreal G. F.	$1	.03½	.01	.....
California	1	.06	.03	1,500	Montreal-London	0.24	.06½	.05	10,700
Can. Gold Fields	0.10	.10	.07	4,500	Okanogan	.....	.....	.....	.....
Decca	1	.03	.01½	.....	Oregon	1	.16½	.....	4,000
Deer Trail Con	1	.03	.01	.....	Payne	1	.84	.70	2,500
Evening Star	1	.07	.03	.....	Rambler-Cariboo	1	.80	.70	.....
Golden Star	1	.06	.01½	.....	Republic Con	1	.67½	.59	2,500
Gold Hills Dev	1	.03½	.01	.....	Slocan-Sovereign	1	.05¾	.03½	.....
Knob Hill	1	.68	.47½	1,000	Virtue	1	.31	.28	15,800
Monte Christo	1	.03½	.01	.....	War Eagle	1	1.10	.95	1,000

* Montreal Stock Exchange. Total sales, 46,000 shares.

MEXICO. Dec. 7.

Name of Company.	No. of shares.	Last div'd.	Prices. Op'g.	Cl'g.	Name of Company.	No. of shares.	Last div'd	Prices. Op'g.	Cl'g.
Durango:					Hidalgo:				
Barradon y Cab	2,400	.....	$30	$20	Real del Monte	2,554	10.00	600	550
Candelaria de Pan	1,200	.....	20	20	San Francisco Hc.	6,000	1.00	115	120
Capuzaya Guan.	2,400	.....	15	12	Soledad	960	5.00	270	230
Restauradora	10,000	.....	10	20	Sorpresa	960	7.50	210	200
Guanajuato:					Union Hacienda	2,000	5.00	245	240
Angustias	2,400	5.00	140	130	Mexico:				
Cinco Senores y An.	2,000	15.00	260	245	Coronas	500	.....	75	75
Guadalupe Hacie'a.	10,000	2.00	205	200	Esperanza y An	3,000	10.00	900	950
Trinidad, aviadora	2,000	.....	.....	.....	Michoacan:				
do. aviada	400	.....	6	7	Luz de Borda ava.	4,000	.....	50	28
Zona Minera de Poz	2,400	.....	6	8	S. Luis Potosi:				
Hidalgo:					Concep. y An	2,400	.....	360	320
Amistad y Concord.	9,600	1.41	23	27	Zacatecas:				
Arevalo	720	.....	200	200	Asturiana y An	2,500	10.00	160	170
Bartolome de Med	2,000	2.00	70	60	Cabezon	2,400	.....	15	10
Carmen	1,100	7.75	150	130	C'delar de Pinos	2,500	.....	180	160
Luz Ca Maravillas	800	.....	100	80	Palma de Somb	2,400	.....	40	30
Pabellon	800	27.89	30	10	.....	.....	.....	.....	.....

DENVER, COLO.‡

Name of Company.	Par val.	Dec. 10 B.	Dec. 10 A.	Dec. 11. B.	Dec. 11. A.	Dec. 12. B.	Dec. 12. A.	Dec. 13. B.	Dec. 13. A.	Dec. 14. B.	Dec. 14. A.	Dec. 15. B.	Dec. 15. A.	Sales
Acacia	1	.36½	.....	.35	.....	.....	.....	.....	.....	.34⅜	.....	.29½	.29½	6,000
Anaconda	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.33⅞	.....	.....
Arg. J	1	.....	.21½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dictator	1	.02½	.02¾	.02⅝	.02⅞	.....	.....	.....	.....	.02⅝	.02¾	.....	.....	25,000
Elkton	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Franklin	1	.....	.....	.02⅛	.....	.02¼	.....	.....	.....	.02⅜	.....	.02¼	.02½	6,000
Ironclad	1	.05⅛	.05⅜	.06	.06	.05¼	.06	.....	.....	.05⅛	.....	.05⅜	.05⅝	6,500
Key West	1	.03⅛	.03	.03	.03⅛	.02⅞	.....	.....	.....	.03	.03⅛	.02⅜	.03	9,000
Magnet R'k	1	.04⅜	.....	.04	.04¼	.04	.01¾	.....	.....	.04	.04¼	.03½	.03¾	24,000
National	1	.....	.09⅞	.09⅜	.....	.09½	.10¾	.....	.....	.09⅝	.09⅞	.09¼	.09½	8,000
New Haven	1	.08⅝	.09	.09¾	.09⅞	.09⅝	.10¼	.....	.....	.08½	.08⅞	.18⅜	.19½	2,000
New Zeal'd	1	.....	.56	.45	.62	.40	.53	.....	.....	.45	.....	.40	.....	.....
Pharmacist	1	.09½	.09¾	.09	.....	.09¼	.....	.....	.....	.09⅝	.09¾	.08¾	.....	9,000
Pinnacle	1	.....	.....	.....	.....	.....	.17½	.....	.....	.....	.....	.....	.....	2,000
Republic	1	.....	.....	.07½	.....	.08	.09¼	.....	.....	.07⅝	.07¾	.07⅜	.08	4,000

‡ Official Quotations Denver Stock Exchange. Total sales, 111,500 shares.

SPOKANE, WASH. Week Dec. 13.

Name of Company.	Par val.	B.	A.	Sales.	Name of Company.	Par val.	B.	A.	Sales.
Crystal	.....	.03½	.05½	5,000	Mountain Lion	1	.19	.27	.....
Deer Trail Con	$1	.01¾	.02½	5,000	Princess Maud	0.10	.01	.01⅝	.....
Evening Star	1	.03	.06⅞	.....	Quilp	1	.19¼	.26	.....
Gold Ledge	.....	.01	.01¾	.....	Rambler Cariboo	0.25	.20	.26	3,000
Jim Blaine	1	.03	.03⅞	.....	Reservation	.....	.03	.05	.....
Lone Pine Surp. Con.	1	.06¾	.07½	1,000	Sullivan	.....	.13	.14⅞	10,000
Morning Glory	0.10	.05	.06¾	11,000	Tom Thumb	.....	.10	.12½	.....

PARIS. Nov. 29.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening.	Prices. Closing
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs	27,000,000	2,000	85.00	1,765.00	1,760.00
" " Firminy	"	" "	3,000,000	500	175.00	3,400.00	3,380.00
" " Fives-Lille	"	" "	12,000,000	500	.....	475.00	489.00
" " Huta-Bank	Russia	Iron & steel	.....	500	.....	4,275.00	3,965.00
" " la Marine	France	Steel mfrs	20,000,000	500	60.00	1,620.00	1 600.00
Anzin	"	Coal	.....	.....	360.00	6,350.00	6,110.00
Boleo	Lower Cal	Copper	.....	500	176.00	2,580.00	2,580.00
Briansk	Russia	Coal & iron	.....	500	.....	750.00	725.00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	32.50	32.25
Courrieres	France	Coal	600,000	300	90.00	2,600.00	2,400.00
Dombrowa	Russia	"	.....	500	12.50	1,025.00	980.00
Dynamite Centrale	France	Explosives	.....	500	22.50	4 5.00	480.00
Escombrera-Bleyberg	Spain	Lead	.....	500	70.00	1,165.00	1,158.00
Fraser River	Brit. Col'mb.	Gold	250,000	25	.....	8.50	8.00
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	150.50	155.50
Laurium	Greece	Zinc & lead	16,300,000	500	30.00	496.00	498.00
Malfidano	Italy	Zinc	12,500,000	500	50.00	1,045.00	1,045.00
Metaux, Cie. Fran. de	France	Metal d'lers	25,000,000	500	10.00	484.00	485.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	55.00	1,010.00	1,025.00
Napthe Baku	Russia	Petroleum	.....	.....	.....	750.00	738.75
Napthe Nobel	"	"	.....	.....	.....	532.50	537.00
" " parts	"	"	.....	.....	.....	11,090.00	11,100.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	17.50	499.00	504.00
Penarroya	Spain	Coal, etc	.....	500	100.00	2,560.00	2,595.00
Rebecca	Colo'do,U.S.	Gold	5,000,000	25	.....	2.75	2.75
Salines de l'Est	France	Salt	.....	500	5.00	210.00	220.00
Salines du Midi	"	"	.....	500	25.00	930.00	910.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	36.00	666.25	650.00

LONDON Dec 7.

Name of Company.	Country.	Authorized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
			£ s. d.	s.d.		£ s. d.	£ s. d.
Alaska-Mexican, g	Alaska	£200,000	1 0 0	0 4.8	Nov. 1900	18 9	1 3
Alaska-Treadwell, g	"	1,000,000	5 0 0	1 6	" "	9 17 6	10 0 0
Anaconda, c., s	Montana	6,000,000	5 0 0	8 2	Oct., "	9 15 0	10 0 0
De Lamar, g., s	Idaho	40,000	1 0 0	0 6	May, 1900	3 6	4 6
El Oro	Mexico	1 000,000	1 0 0	1 0	Aug., 1900	1 0 6	1 2 6
Grand Central, g., s	Mexico	300,000	1 0 0	2 0	Jan., 1900	10 0	12 6
Hall Mg. & Sm., c., s	British Col.	250,000	1 0 0	.....	.....	4 6	5 6
Le Roi, g	"	1,000,000	5 0 0	5 0	Nov., 1899	7 0 0	7 2 6
Le Roi No. 2, g	"	120,000	5 0 0	.....	.....	24 10 0	25 0 0
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 1900	7 6	12 6
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	2 9	3 3
Mountain Copper	California	1,250,000	5 0 0	9 0	Oct., 1900	5 0 0	5 5 0
Newfoundland, c	Newfoundland	250,000	1 0 0	.....	.....	2 6	7 6
Stratton's Independence	Colorado	1,100,000	1 0 0	2 0	Oct., 1900	1 0 0	1 2 6
Copiapo, c	Chile	200,000	2 0 0	3 4	Dec., 1900	3 7 6	3 12 6
Frontino & Bolivia, g	Colombia	140,000	1 0 0	1 6	Oct., 1899	1 13 9	1 16 3
St. John del Rey, g	Brazil	600,000	1 0 0	rts.	July, 1900	1 6 3	1 7 6
Utah Con.,g.(Highl'nd Boy)	Utah	300,000	1 0 0	rts.	Mar., 1898	6 15 0	7 0 0
Velvet, g	British Col'mbia	100,000	1 0 0	.....	.....	1 2 6	1 5 0
Ymir, g	"	200,000	1 0 0	1 0	Nov., 1899	1 8 9	1 11 3
Rossland Great West, g	"	10 ,000	5 0 0	.....	.....	8 8 9	8 11 3
British Am. Corp	"	1,500,000	1 0 0	2 0	Mar., 1900	15 6	16 0
Linares, l	Spain	45,000	3 0 0	14 0	Oct., 1900	8 10 0	9 10 0
Mason & Barry, c., sul	Portugal	420,000	2 0 0	£1	" "	3 0 0	3 5 0
Rio Tinto, c	Spain	1,625,000	5 0 0	£2	" "	56 5 0	56 10 0
" " pref	"	1,625,000	5 0 0	2 6	" "	6 0 0	6 5 0
Tharsis, c	"	1,250,000	2 0 0	15 0	Apr., 1900	8 7 6	8 12 6
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	3 5 0	3 7 6
Broken Hill Prop., s	N. S. Wales	384,000	8 0	1 6	Nov., 1900	2 8 9	2 10 0
Great Boulder Prop	W. Australia	175,000	2 0	.....	.....	5 9	1 6 3
Hannan's Brownhill, g	"	140,000	1 0 0	7 6	Oct., 1900	4 11 3	4 13 9
Ivanhoe Gold Corp	"	1,000,000	5 0 0	5 0	Nov., 1900	9 10 0	9 12 6
Kalgurlie, g	"	120,000	1 0 0	rts.	Oct., 1899	4 6 3	4 8 9
Lake View Consols, g	"	250,000	1 0 0	5 0	Aug., 1900	14 8 9	14 11 3
Mt. Lyell M. & R., l., c	Tasmania	900,000	3 0 0	2 0	Jan., 1900	6 0 0	6 5 0
Mt. Morgan, g	Queensland	1,000,000	1 0 0	7	Dec., 1900	5 1 3	5 3 9
Waihi g	New Zealand	320,000	1 0 0	2 6	Dec., 1900	11 2 6	11 7 6
Champion Reef, g	Colar Fields	220,000	10 0	5 0	Jan., 1901	6 0 0	6 2 6
Mysore Gold, g	"	250,000	10 0	4 0	Nov., 1900	5 11 3	5 13 9
Nundyroog, g	"	242,000	1 0 0	2 0	" "	3 2 6	3 5 0
Ooregum, g	"	145,000	1 0 0	2 6	Dec., 1900	3 15 0	3 17 6
" pref. g	"	120,000	1 0 0	2 6	" "	5 0 0	5 2 6
British S. Africa, chartered	So. Africa	5,000,000	1 0 0	rts.	May, 1899	3 7 6	3 10 0
Cape Copper, c	"	600,000	1 0 0	5 0	Jan., 1901	8 6 3	8 8 9
" pref	"	150,000	2 0 0	5 0	" "	5 2 6	5 7 6
City & Suburban (New), g	Transvaal	1,360,000	4 0 0	8 0	Aug., 1899	3 2 6	3 7 6
Con. Deep Level, g	"	200,000	1 0 0	x all	June, 1898	1 0 0	1 5 0
Crown Reef, g	"	120,000	1 0 0	18 0	Nov., 1899	15 0 0	15 10 0
De Beers Con., d	Cape Colony	3,950,000	5 0 0	£1	Sept., 1899	29 2 6	29 7 6
Ferreira, g	Transvaal	90,000	1 0 0	30 0	Aug., 1899	20 0 0	20 10 0
Geldenhuis Deep, g	"	350,000	1

DIVIDENDS.

COLD, SILVER, COPPER, ZINC, LEAD AND QUICKSILVER COMPANIES.

Number.	Name and Location of Company.		Author-ized Capital Stock.	Shares Issu'd No.	Par Val	Dividends. Paid, 1900.	Total to Date.	Latest. Date.	Amt.
1	Acacia, g.	Colo.	$1,500,000	1,500,000	$1	$45,000	$45,000	Dec.. 1900	.01
2	Adams, s.l.c.	Colo.	1,500,000	150,000	10	7,500	701,000	Nov.. 1900	.05
3	Ætna Con., q.	Cal ..	500,000	100,000	5	30,000	225,000	April. 1900	.15
4	Alaska-Mexican, g.	Alask	1,000,000	180,000	5	72,000	501,037	Oct... 1900	.10
5	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	300,000	4,520,000	Oct... 1900	.37½
6	Amalgamated, c.	Mont.	75,000,000	750,000	100	6,000,000	7,500,000	Oct... 1900	2.00
7	Amanda, g.	Colo.	1,000,000	1,000,000	1	10,000	10,000	June. 1900	.01
8	Amazon, g.	Colo.	600,000	600,000	1	102,000	121,882	May.. 1900	.10
9	Amer. Sm & Ref., pref.	U. S.	32,500,000	325,000	100	2,113,803	2,682,553	Oct... 1900	1.75
10	Am. Zinc, Lead & Sm.	Mo..	2,500,000	60,000	25	60,000	180,000	Jan.. 1900	1.00
11	Anaconda, c.	Mont.	30,000,000	1,200,000	25	4,800,000	16,950,000	Oct... 1900	2.00
12	Apollo Con., g.	Alask	1,000,000	100,000	10	70,000	210,000	Jan.. 1900	.07
13	Argonaut, g.	Cal ..	2,000,000	200,000	10	70,000	490,000	May.. 1900	.05
14	Arizona, c.	Ariz..	3,190,550	.....	....	576,429	1,464,848	Sept.. 1900	.84
15	Atlantic, c.	Mich.	1,000,000	40,000	25	80,000	860,000	Feb.. 1900	2.00
16	Bald Butte, g. s.	Mont.	250,000	250,000	1	82,500	852,148	Sept.. 1900	.06
17	Boston-Aurora, pref.	Mo..	800,000	32,000	25	37,120	66,160	May.. 1900	.50
18	Boston & Colo. Smelting	Colo..	750,000	15,000	50	45,000	315,000	Oct... 1900	.75
19	Boston Duenweg, z.	Mo...	1,000,000	40,000	10	24,000	56,900	June.. 1900	.10
20	Boston Get There, z.	Mo...	250,000	22,500	10	9,000	20,250	April. 1900	.10
21	Boston Gold-Copper Sm.	Colo..	1,000,000	1,000,000	1	50,000	50,000	Nov.. 1900	.02½
22	Boston-Little Circle, z.	Mo-K.	1,000,000	100,000	10	12,500	87,500	Mar.. 1900	.12½
23	Boston & Mont. Con., c.s.g	Mont.	3,750,000	150,000	25	6,450,000	20,975,000	Nov.. 1900	15.00
24	Boston Phila., z. l.	Kas..	200,000	20,000	10	2,000	2,000	May .. 1900	.10
25	Boston Providence, z., pf	Mo...	150,000	15,000	10	6,000	17,242	Aug.. 1900	.05
26	Boston, q.	Cal...	1,000,000	100,000	10	10,000	20,000	Jan.. 1900	.10
27	Boston Springfield, z.	Mo...	500,000	20,000	25	15,000	15,000	June. 1900	.25
28	Breece.	Colo..	5,000,000	200,000	25	30,000	100,000	Dec. . 1900	.05
29	Buffalo Hump, g. s. l.	Idaho	3,000,000	250,000	10	275,000	275,000	Dec. . 1900	.10
30	Bullion-Beck & Champ.	Utah.	1,000,000	100,000	10	60,000	2,498,400	June. 1900	.10
31	Bunker Hill & Sullivan.	Idaho	3,000,000	300,000	10	231,000	1,032,000	Nov.. 1900	.07
32	Butte & Boston Con., c.	Mont.	2,000,000	200,000	10	1,000,000	1,000,000	Dec.. 1900	5.00
33	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	7,000,000	73,850,000	Dec.. 1900	20.00
34	Cariboo McKinney, g.	B.Col	1,250,000	1,250,000	1	86,500	478,087	Oct... 1900	.01½
35	Centen'l Eureka, g.s.l.c.	Utah.	5,000,000	100,000	25	267,700	2,417,700	Oct... 1900	.50
36	Center Creek, l. z.	Mo...	1,000,000	100,000	10	30,000	40,000	Dec. . 1900	.20
37	Central Lead, l.	Mo...	1,000,000	10,000	100	60,000	197,000	Nov.. 1900	.50
38	Cloverdale, z.	Mo...	1,000,000	100,000	10	60,000	80,000	July.. 1900	.20
39	Columbia, l.	Mo...	500,000	48,500	10	16,975	16,975	Nov.. 1900	.05
40	Commonwealth, z., pref.	Mo ..	500,000	100,000	5	30,000	50,000	June. 1900	.05
41	Consolidated Gold Mines	Colo..	1,000,000	1 000,000	1	100,000	110,000	Nov.. 1900	.01
42	Con. Mercer Gold Mines.	Utah.	5,000,000	1,000,000	5	225,000	1,591,000	Nov.. 1900	.11
43	Consolidated, z. l., pf.	Mo...	400,000	400,000	1	8,000	8,000	Jan.. 1900	.20
44	Cordell, z. l.	Mo...	300,000	60,000	5	27,000	30,000	Sept.. 1900	.05
45	Cripple Creek Con., g.	Colo..	2,000,000	2,000,000	1	160,000	160,000	Mar.. 1900	.08
46	Cresus, g.	Cal...	1,000,000	200,000	5	91,800	139,300	Dec. . 1900	.06
47	Daly West, g.	Utah.	3,000,000	150,000	20	450,000	570,000	Nov.. 1900	.25
48	De Lamar, g. s.	Idaho	2,000,000	400,000	5	48,000	2,394,000	May .. 1900	.12
49	Dixie, g.	Utah.	125,000	125,000	1	10,000	10,000	April. 1900	.02
50	Doe Run, l.	Mo...	1,500,000	10,000	100	50,000	402,073	Oct... 1900	.50
51	Ducktown, c. l. sul. (ord)	Tenn.	374,000	7,480	50	.....	95,744	Dec.. 1899	9.60
52	Ducktown (founder).	Tenn.	1,000	200	5	.....	41,160	Dec.. 1899	162.00
53	Elkton Con., g.	Colo..	3,000,000	2,500,000	1	258,750	979,461	Dec.. 1900	.03
54	Empire State-Idaho.	Idaho	1,000,000	98,514	10	354,649	672,687	Dec. . 1900	.30
55	Favorite, g.	Colo..	1,200,000	1,200,000	1	48,000	48,000	April. 1900	.04
56	Florence, s.	Mont.	2,500,000	440,000	5	22,000	252,000	April. 1900	.05
57	Frisco Con., l. s.	Idaho	2,500,000	500,000	5	.....	920,000	Nov.. 1899	.25
58	Garfield Con., g.	Colo..	1,200,000	1,200,000	1	.....	34,000	May.. 1899	.01
59	Gemini.	Utah.	500,000	5,000	100	50,000	700,000	Aug.. 1900	10.00
60	Gold Belt, g.	Colo..	1,250,000	1,250,000	1	112,500	112,500	Aug.. 1900	.09
61	Gold Coin of Victor, g.	Colo..	1,000,000	1,000,000	1	220,000	580,000	Nov.. 1900	.02
62	Gold Deposit, g.	Colo..	500,000	500,000	1	10,000	10,000	Mar.. 1900	.02
63	Gold King, g.	Colo..	1,000,000	936,850	1	112,421	178,001	Oct... 1900	.03
64	Golden Cycle, g.	Colo..	1,000,000	200,000	5	110,000	368,500	Nov.. 1900	.05
65	Golden Eagle, g.	Colo..	500,000	500,000	1	5,000	25,000	June. 1900	.01
66	Grand Central, q.	Utah.	250,000	250,000	1	25,000	691,250	Nov.. 1900	.10
67	Grand Gulch.	Ariz..	250,000	240,000	1	9,600	9,600	April. 1900	.01
68	Grass Valley Expl.	Cal...	100,000	30,000	2	37,500	67,500	May.. 1900	.25
69	Greater Gold Belt, g.	Col ..	5,000,000	3,800,000	1	76,000	76,000	June. 1900	.02
70	Gwin, g.	Cal .	1,000,000	100,000	10	45,000	126,500	Nov.. 1900	.15
71	Hall Mg. & Sm.	B. Col	1,250,000	250,000	5	.....	120,000	May.. 1899	.24
72	Hecla, l. s.	Idaho	250,000	1,000,000	¼	80,000	80,000	Oct... 1900	.02
73	Hecla Con., s. l.	Mont.	1,500,000	30,000	50	15,000	2,205,000	Oct... 1900	.05
74	Hidden Treasure, g.	Cal...	360,000	36,000	10	28,800	457,452	Sept.. 1900	.10
75	Holy Terror, g.	S. D..	500,000	500,000	1	5,000	172,000	Jan.. 1900	.01
76	Home, g.	Colo..	50,000	50,000	1	100,000	100,000	July.. 1900	.50
77	Homestake, g.	S. D..	21,000,000	210,000	100	1,155,000	9,208,750	Nov.. 1900	.50
78	Horn Silver, g. s. c.z. l.	Utah.	10,000,000	400,000	25	20,000	5,270,000	June. 1900	.05
79	Idaho, g.	Idaho	1,000,000	1,000,000	1	8,188	8,188	April. 1900	.01
80	Idaho, s. l.	B.Col	500,000	500,000	1	.....	292,000	Jan.. 1899	.05¾
81	Independence Con.	Colo..	2,500,000	2,500,000	1	100,000	100,000	Aug.. 1900	.04
82	International, z.	Mo...	1,000,000	1,000,000	1	26,427	26,427	July . 1900	.01
83	Iowa, g. s. l.	Colo..	1,666,667	1,666,667	1	39,334	136,834	June. 1900	.00¾
84	Iron Silver.	Colo .	10,000,000	500,000	20	50,000	2,550,000	Dec.. 1900	.10
85	Isabella, g.	Colo.	2,250,000	2,250,000	1	157,500	697,500	Sept.. 1900	.01
86	Jack Pot, g.	Colo..	$1,250,000	1,250,000	$1	.....	$175,000	Dec.. 1899	.06
87	Jamison, g.	Cal ..	3,900,000	390,000	10	.....	50,700	April. 1899	.10
88	Klondike Bonanza, Ltd.	Klond	750,000	52,750	5	.....	12,000	Aug .. 1899	.24
89	La Fortuna, g.	Ariz..	250,000	250,000	1	$252,500	895,000	Oct... 1900	.05
90	Lake City, g.	Colo..	50,000	50,000	1	3,875	3,875	May . 1900	.01
91	Last Chance, s. l.	B.Col	500,000	500,000	1	.....	45,000	Apr.. 1899	.05
92	Last Dollar, g.	Colo..	1,500,000	1,500,000	1	90,000	120,000	Nov.. 1900	.02
93	Le Roi, g.	B.Col	5,000,000	200,000	5	.....	1,305,000	Nov.. 1899	1.20
94	Lightner, g.	Cal...	125,000	105,000	1	5,250	5,250	Oct... 1900	.05
95	Lillie, g.	Colo..	1,250,000	250,000	5	45,117	349,183	April. 1900	.05
96	Little Tiger, g.	Cal...	500,000	500,000	1	15,000	47,500	Feb.. 1900	.01½
97	Madison, g.	Colo..	1,250,000	1,050,000	1	35,000	35,000	June. 1900	.03½
98	Magnolia, g.	Colo..	1,250,000	1,100,000	1	187,000	187,000	July.. 1900	.17
99	Mammoth, g. s. c.	Utah	10,000,000	400,000	25	200,000	1,810,000	Nov.. 1900	.05
100	Marion Con., g.	Colo..	5,000,000	500,000	10	.....	300,000	May.. 1899	.01
101	Mary McKinney, g.	Colo..	1,000,000	1,000,000	1	150,000	180,000	Oct... 1900	.08
102	Midget, g.	Colo..	1,000,000	1,000,000	1	15,000	15,000	May.. 1900	.15
103	Modoc, g. s.	Colo..	500,000	500,000	1	55,000	200,000	Nov.. 1900	.01
104	Monarch, g.	Colo..	1,000,000	1,000,000	1	120,000	120,000	April. 1900	.12
105	Montana, Ltd., g. s.	Mont.	3,300,000	657,128	5	.....	453,700	April. 1899	.12
106	Montana Ore Purchas'g.	Mont.	2,500,000	80,000	25	240,000	1,600,000	Sept.. 1900	1.00
107	Morning Star Drift, g.	Cal...	240,000	2,400	100	7,200	854,490	Sept.. 1900	3.00
108	Morse, g.	Colo..	1,250,000	1,250,000	1	.....	215,650	May.. 1899	.12
109	Mountain, c.	Cal ..	6,250,000	250,000	25	1,200,000	2,373,750	Oct... 1900	2.16
110	Mt. Diablo, s.	Nev..	5,000,000	50,000	100	5,271	260,271	Jan.. 1900	.10
111	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1	.....	75,000	Dec.. 1899	.04
112	Mt. Shasta, g.	Cal...	100,000	20,000	5	.....	6,000	May.. 1899	.30
113	Moulton, g.	Mont.	2,000,000	400,000	5	.....	500,000	Oct... 1899	.05
114	Napa Con., q.	Cal ..	700,000	100,000	7	60,000	1,200,000	Oct... 1900	.10
115	National Lead, com.	U. S..	15,000,000	149,054	100	149,054	1,341,486	Mar.. 1900	1.00
116	National Lead, pf.	U. S .	15,000,000	149,040	100	1,043,280	10,579,280	Dec.. 1900	1.75
117	New Idria, q.	Cal...	500,000	100,000	5	80,000	250,000	Oct... 1900	.20
118	N. J. & Mo., z.	Mo...	250,000	2,500	100	11,000	11,000	June.. 1900	2.00
119	New York, z.	Kas..	700,000	28,000	25	.....	6,500	Oct... 1899	.25
120	N.Y.& Hon Rosario, s.g.	C. A..	1,500,000	150,000	10	255,000	1,415,000	Dec.. 1900	.40
121	North Star Mines.	Cal ..	5,000,000	250,000	10	.....	584,850	Nov.. 1899	.20
122	Old Colony Zinc & Sm.	Mo...	1,100,000	69,309	10	68,276	68,276	Oct... 1900	.25
123	Omega, g.	Colo..	1,500,000	1,212,550	1	18,188	18,188	June. 1900	.01½
124	Ontario, s. l.	Utah.	15,000,000	150,000	100	90,000	13,662,500	April. 1900	.30
125	Orphan Belle, g.	Colo..	1,000,000	1,000,000	1	.....	197,899	Dec.. 1899	.09
126	Original Empire, g.	Cal...	5,000,000	50,000	100	.....	530,000	Oct... 1899	1.00
127	Osceola, c.	Mich.	2,500,000	93,000	25	558,000	3,638,500	Dec.. 1900	3.00
128	Parrot, c.	Mont.	2,300,000	229,850	10	1,379,100	4,393,825	Oct... 1900	1.50
129	Pennsylvania Con., g.	Cal...	5,150,000	51,500	100	25,750	161,325	May.. 1900	.10
130	Petro, g.	Utah.	1,000,000	200,000	5	.....	32,000	Oct... 1899	.02½
131	Pioneer, g.	Cal...	1,000,000	100,000	10	.....	62,500	Mar.. 1899	.12½
132	Plumas Eureka, g.	Cal ..	1,406,250	140,625	10	84,375	2,797,544	April. 1900	.60
133	Portland, g.	Colo..	3,000,000	3,000,000	1	750,000	3,307,080	Oct... 1900	.06
134	Queen Bess Propr., s. l.	B.Col	500,000	100,000	5	.....	25,000	July.. 1899	.12½
135	Quicksilver, pref.	Cal...	4,300,000	43,000	100	21,500	1,866,911	July.. 1900	.50
136	Quincy, c.	Mich.	2,500,000	100,000	25	900,000	11,970,000	Aug.. 1900	4.00
137	Rambler—Cariboo, s. l.	B.Col	1,250,000	1,250,000	1	33,750	105,000	Mar.. 1900	.01
138	Republic Con., g.	Wash	3,500,000	3,500,000	1	105,000	382,500	Mar.. 1900	.01
139	Reward, g.	Cal ..	1,000,000	100,000	10	.....	20,000	Aug . 1899	.20
140	Rocco–Homestake–Nev .	Nev..	300,000	300,000	1	9,000	9,000	Dec.. 1900	.01½
141	Russell–Irwin, z.	Mo...	250,000	25,000	10	.....	15,000	Oct... 1899	.10
142	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	138,000	Oct... 1899	.00½
143	St. Joseph, l.	Mo...	3,000,000	250,000	10	112,500	3,272,200	Sept. 1900	.15
144	Santa Rita, g.	Colo..	1,000,000	1,000,000	1	4,000	4,000	July.. 1900	.02
145	Silver King, g. s. l.	Utah.	3,000,000	150,000	20	825,000	3,275,000	Nov.. 1900	.50
146	Silver Shield, g.	Utah.	300,000	300,000	1	1,500	1,500	Dec.. 1900	.00¼
147	Small Hopes, s.	Colo..	5,000,000	250,000	20	.....	3,325,000	Feb.. 1899	.10
148	Smuggler, s. l. z.	Colo..	1,000,000	1,000,000	1	350,000	1,700,000	Nov.. 1900	.03
149	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	165,000	Oct... 1899	.05
150	Southern Boy, g.	Colo..	1,250,000	875,000	1	17,500	17,500	May . 1900	.02
151	Squaw Mountain, g.	Colo..	2,000,000	2,000,000	....	.....	10,000	Nov.. 1899	.00½
152	Standard Con., g. s.	Cal...	2,000,000	200,000	10	80,000	3,979,226	Nov.. 1900	.10
153	Standard, s. l.	Idaho	500,000	500,000	1	295,000	2,100,000	Oct... 1900	.08
154	Stratton's Independ'ce.	Colo..	5,500,000	1,000,007	5	1,789,337	2,765,352	Oct... 1900	.48
155	Swansea, s. l.	Utah.	500,000	100,000	5	65,000	261,500	Nov.. 1900	.05
156	Tamarack, c.	Mich.	1,500,000	60,000	25	1,020,000	7,290,000	Dec.. 1900	10.00
157	Tomboy, g.	Colo..	1,500,000	300,000	5	144,000	956,000	Dec.. 1900	.24
158	Touraine, g.	Colo..	1,250,000	1,250,000	1	87,500	87,500	April. 1900	.07
159	Union, g.	Colo..	1,250,000	1,250,000	1	312,500	395,244	Sept.. 1900	.25
160	Union, z. l.	Kas..	500,000	500,000	1	15,000	15,000	Aug.. 1900	.01
161	United, z. l., pref.	Mo...	6,000,000	14,938	25	27,398	30,263	Oct... 1900	.50
162	United Verde, c.	Ariz..	3,000,000	300,000	10	1,875,000	2,737,500	Nov.. 1900	.75
163	Utah, g.	Utah.	1,000,000	100,000	10	2,000	181,000	Oct... 1900	.02
164	Vindicator Con., g.	Colo..	1,500,000	1,500,000	1	188,500	493,500	Oct... 1900	.02
165	War Eagle Con., g. s. c.	B. C..	2,000,000	1,750,000	1	52,500	545,250	Feb.. 1900	.01½
166	What Cheer, z.	Mo...	225,000	22,500	10	9,000	11,250	May.. 1900	.20½
167	Wolverine, c.	Mich.	1,500,000	60,000	25	240,000	510,000	Oct.. 1900	2.00
168	Yellow Aster, g.	Cal...	1,000,000	100,000	10	140,000	449,416	Nov.. 1900	.10
169	Ymir, g.	B.Col	1,000,000	125,000	5	.....	30,000	Nov.. 1899	.24

COAL, IRON AND OTHER COMPANIES.

Number.	Name and Location of Company.		Author-ized Capital Stock.	Shares Issu'd No.	Par Val	Dividends. Paid, 1900.	Total to Date.	Latest. Date.	Amt.
1	Alabama Coal & Iron, pf	Ala...	$2,500,000	25,000	$100	$175,000	$218,750	Nov.. 1900	1.75
2	Am. Agricul. Chem., pf.	U. S..	20,000,000	170,000	100	1,020,000	1,530,000	Oct... 1900	3.00
3	American Cement.	Pa....	2,100,000	200,000	10	80,000	140,000	July.. 1900	.40
4	American Coal.	Md...	1,500,000	60,000	25	255,000	982,500	Sept.. 1900	1.00
5	Am. Fuel Oil.	Cal...	100,000	100,000	1	11,000	14,000	Nov.. 1900	.01
6	Am. Steel Hoop, pf.	U. S..	14,000,000	140,000	100	980,000	1,225,000	Oct... 1900	1.75
7	Am. Steel & Wire, com.	U. S..	50,000,000	500,000	100	2,625,000	2,625,000	Oct... 1900	1.75
8	Am. Steel & Wire, pf.	U. S..	40,000,000	400,000	100	2,800,000	5,600,000	Oct... 1900	1.75
9	Arizona Western Oil.	Cal...	100,000	100,000	1	1,000	1,000	Sept.. 1900	.01
10	Bethlehem Steel.	Pa...	15,000 000	300,000	50	600,000	900,000	Dec.. 1900	.50
11	Buckhorn Oil.	Cal...	200,000	16,000	10	3,800	3,800	Mar.. 1900	.05
12	Burlington Oil.	Cal...	60,000	60,000	1	3,000	3,000	Oct... 1900	.01
13	Cambria Steel	Pa...	16,000,000	320,000	50	940,000	1,600,000	Nov.. 1900	.50
14	Colo. Fuel & Iron, pf.	Colo..	2,000,000	20,000	100	800,000	1,160,000	Dec.. 1900	8.00
15	Consolidation Coal.	Md...	10,250,000	102,500	100	205,000	5,113,000	Feb.. 1900	2.00
16	Diamond Star Oil.	Cal..	250,000	250,000	1	5,000	5,000	Nov.. 1900	.02
17	Empire Steel & Iron, pf.	U. S..	5,000,000	23,700	100	71,100	142,200	July.. 1900	1.50
18	Federal Steel, com.	U. S..	50,000,000	464,843	100	1,743,162	1,743,162	Mar.. 1900	2.50
19	Federal Steel, pf.	U. S..	50,000,000	532,609	100	5,059,794	6,657,654	Oct... 1900	1.75
20	General Chem., com.	U. S..	12,500,000	70,703	100	282,812	411,814	Dec.. 1900	1.00
21	General Chem., pf.	U. S..	12,500,000	81,264	100	365,688	519,959	Oct... 1900	1.50
22	Gray Eagle Oil.	Cal...	250,000	100,000	2½	50,000	120,000	Nov.. 1900	.50
23	Great Western Oil.	Cal...	100,000	10,000	10	10,000	10,000	Oct... 1900	.10
24	Home Oil.	Cal...	100,000	100,000	1	190,000	190,000	Nov.. 1900	.10
25	Homestake Oil.	Cal...	100,000	10,000	10	3,500	3,500	Nov.. 1900	.25
26	Jefferson & Clearf. C'l, cm	Pa...	1,500,000	15,000	100	30,000	30,000	Aug.. 1900	2.00
27	Jefferson & Clearf. C'l, pf.	Pa...	1,500,000	15,000	100	75,000	187,500	Aug.. 1900	2.50
28	Kern Oil.	Cal...	100,000	100,000	1	8,500	8,500	Nov.. 1900	.50
29	Lehigh Coal & Nav.	Pa...	14,346,650	286,933	50	789,066	18,516,990	Oct... 1900	1.50
30	Maryland Coal, pf.	Md...	$1,885,005	18,850	$100	$94,256	$640,869	Dec.. 1900	3.00
31	Monongahela R. Coal, pf	Pa....	10,000,000	200,000	50	350,000	350,000	July.. 1900	1.75
32	Montana Coal & Coke.	Mont.	5,000,000	200,000	25	120,000	120,000	Oct... 1900	.30
33	National Salt, com.	U. S..	7,000,000	70,000	100	245,000	245,000	Dec.. 1900	1.50
34	National Salt, pf.	U. S..	5,000,000	50,000	100	350,000	525,000	Nov.. 1900	1.75
35	National Steel, pf.	U. S..	27,000,000	270,000	100	1,890,000	3,307,500	Dec.. 1900	1.75
36	New Central Coal.	Md...	1,000,000	50,000	20	40,000	510,000	Nov.. 1900	.40
37	Oceanic Oil.	Cal...	100,000	100,000	1	1,000	1,000	Sept.. 1900	.01
38	Pacific Coast Borax.	Cal...	2,000,000	20,000	100	220,000	742,500	Nov.. 1900	1.00
39	Park Crude Oil.	Cal...	100,000	82,146	1	4,897	4,897	Sept.. 1900	.01
40	Pennsylvania Coal.	Pa...	5,000,000	100,000	50	800,000	19,700,000	Nov.. 1900	2.00
41	Pennsylvania Salt.	Pa....	2,500,000	50,000	50	300,000	12,550,000	Oct... 1900	3.00
42	Pennsylvania Steel, pf.	Pa...	1,500,000	15,000	100	105,000	131,250	Oct... 1900	1.75
43	Pittsburg Coal., pf.	Pa...	32,000,000	320,000	100	2,240,000	2,240,000	Oct... 1900	1.75
44	Producers' & Con. Oil	Cal...	1,000,000	10,000	100	3,000	3,000	Oct... 1900	.30
45	Republic Iron & Steel, pf	U. S..	25,000,000	203,069	100	1,421,483	1,776,854	Oct... 1900	1.75
46	Rex Crude Oil.	Cal...	500,000	85,000	5	21,250	21,250	Oct... 1900	.02
47	Sloss-Sheffield Ir.&St., pf	U. S..	20,000,000	67,000	100	352,500	352,500	Oct.. 1900	1.75
48	Standard Oil (of N. J.).	U. S..	100000,000	975,000	100	46,800,000	73,125,000	Sept.. 1900	8.00
49	Susquehanna Ir. & Steel	Pa..	1,500,000	300,000	5	112,500	292,500	Oct... 1900	.07½
50	Tenn. Coal, I. & R.R., com	Tenn.	23,000,000	225,536	100	902,144	1,553,216	Nov.. 1900	2.00
51	Tenn. Coal, Ir. & R.R., pf	Tenn.	248,000	2,480	100	143,840	243,040	Nov.. 1900	2.00
52	Texas & Pacific Coal.	Tex..	2,000,000	20,000	100	120,000	1,800,000	Oct... 1900	1.50
53	United States Oil.	W.Va	2,500,000	100,000	25	275,000	575,000	Oct.. 1900	.50
54	Va.-Carolina Chem., com	U. S..	12,000,000	90,000	100	360,000	720,000	Dec.. 1900	1.00
55	Va.-Carolina Chem., pf.	U. S .	12,000,000	100,000	100	800,000	1,200,000	Oct... 1900	2.00
56	West Lake Oil.	Cal ..	500,000	500,000	1	50,000	50,000	Sept.. 1900	.01
57	Westmoreland Coal.	Pa....	5,000,000	250,000	50	150,000	.....	Oct... 1900	1.50
58	Yukon Oil.	Cal...	2,500,000	100,000	2½	18,000	21,000	Oct... 1900	.02

This table is corrected up to December 8th. Correspondents are requested to forward changes or additions.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT WHOLESALE PRICES.

	Cust. Meas.	Price.
Abrasives—		
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF	lb.	$0.12
Minute No. 1	"	.15
No. 15	"	1.00
Corundum, N. C.	"	.07@.10
Chester, Mass.	"	.04½@.05
Crushed Steel, f. o. b. Pittsburg	"	.05½
Emery, Turkish flour, in kegs	"	.03
Grains, in kegs	"	.04½@.05
Naxos flour, in kegs	"	.03
Grains, in kegs	"	.05
Chester flour, in kegs.	"	.03
Grains, in kegs	"	.04½@.05
Peekskill flour, in kegs	"	.01¾
Grains, in kegs.	"	.02½
Crude, ex-ship, N. Y.: Kuluk (Turkey)	lg. ton	22.00@24.00
Abbott (Turkey)	"	26.50@30.00
Naxos (Greek) h. gr.	"	32.00
Pumice Stone, Am. powd.	lb.	.01@.02
Italian, powdered	"	.01½
Lump, per quality	"	.04@.40
Rottenstone, ground	"	.02½@.03
Lump, per quality	"	.05@.14
Rouge, per quality	"	.10@.30
Steel Emery, f.o.b. Pittsburg	"	.07
Acids—Acetic, 30% pure	100 lbs.	3.50
30% ch. pure	"	6.00
80% pure	"	7.50
Benzoic, English	oz.	.12
German	lb.	.45
Boracic, cryst.	"	.10½@.11
Powdered	"	.11@.11½
Carbolic, crude, 60%	gal.	.27
Cryst, 37% drums	lb.	.23
Liquid, 95%	gal.	.45
Carbonic, liquid gas	lb.	.12½
Chromic, crude	"	.20
Chem. pure	"	.50
Hydrochloric, ch. pure.	"	.07
Hydrofluoric, 30%	"	.03
48%	"	.05
Best	"	.25
Nitric, chem. pure	"	.09
Sulphuric, chem. pure	"	.07
Sulphurous, liquid anhy.	"	.08
Tartaric, cryst.	"	.30@.31
Powder	"	.30½@.31½
Alcohol—Grain	gal.	2.45
Refined wood, 95@97%	"	.75@.80
Purified	"	1.50
Alum—Lump	100 lbs.	1.75
Ground	"	1.85
Powdered	"	3.00
Chrome, com'l	"	2.75@3.00
Aluminum—Nitrate	lb.	1.50
Oxide, com'l, common	"	.06½
Best	"	.20
Pure	"	.80
Hydrated	100 lbs.	2.60
Sulphate, pure	"	1.50@1.75
Com'l	"	1.15@1.25
Ammonia—Aqua, 16°	lb.	.03
18°	"	.03¼
20°	"	.03¾
26°	"	.05½
Ammonium—		
Bromide, pure	"	.52@.53
Carbonate lump	"	.08¼@.08½
Powdered	"	.09¼@.09½
Muriate, gran.	"	.06
Lump	"	.09¼
Nitrate, white, pure (99%)	"	.10½
Phosphate, com'l	"	.12
Chem. pure	"	60
Antimony—Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾
Best	"	.08½
Oxide, com'l white, 95%	"	.09½
Com'l white, 99%	"	.12
Com'l gray	"	.07
Sulphuret, com'l	"	.16
Arsenic—White	"	.04½@.04¾
Red	"	.07¼@.07¾
Asphaltum—		
Ventura, Cal.	sh. ton	32.00
Cuban	lb.	.01½@.03¼
Egyptian, crude	"	.05½@.06
Trindad, refined	lg. ton	35.00
San Valentino (Italian).	"	15.00
Seyssel (French) mastic.	sh.ton	20.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾
Barium—Carbonate, Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@.02
Chloride, com'l	"	.02@.02¼
Chem. pure cryst	"	.05
Nitrate, powdered	"	.06
Oxide, com'l, hyd. cryst	"	.18
Hydrated, pure cryst.	"	.25
Pure, powd.	"	.27
Sulphate	"	.01
Barytes—		
Am. Cr., No. 1	sh.ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
German, gray	"	14.50
Snow white	"	17.00
Bauxite—Ga. mines: 1st grade	lg. ton.	5.00
Second grade	"	4.25@4.50
Ala., f.o.b., 1st grade	"	5.00
Second grade	"	4.25@4.50
Bismuth—Subnitrate	lb	1.80
Subcarbonate	"	2.00
Bitumen, "B"	"	.03½
"A"	"	.05
"A" and "B"	"	.04½
Bone Ash	"	03¾@.03½
Borax	lb.	$.07¼@.07½
Calcined	"	.25
Bromine	"	.40
Cadmium—Metallic	"	1.40
Sulphate	100 lbs.	2.00@2.50
Calcium—Acetate, gray.	"	1.55
" brown	"	1.05
Carbide, ton lots, f. o. b. Niagara Falls, N.Y.	sh. ton	75.00
Carbonate, ppt.	lb.	.05
Chloride, com'l	100 lbs.	.90
Best	"	1.00
Sulphite	lb.	.05
Cement—		
Portland, Am., 400 lbs.	bbl.	1.50@2.00
Belgium	"	1.95@2.20
English	"	2.45@2.55
German	"	2.30@2.70
"Rosendale," 300 lbs.	"	.95
Sand cement, 400 lbs.	"	1.55@1.95
Slag cement, imported.	"	1.65
Ceresine—		
Orange and Yellow	lb.	.13
White	"	.14
Chalk—Lump, bulk	sh. ton	2.15
Ppt. per quality	lb.	.05@.07
Chlorine—Liquid	"	.30
Water	"	.15
Chrome Ore—		
(50% ch.) ex ship, N. Y.	lg. ton	26.00
Sand, f.o.b. Baltimore	"	33.00
Bricks, f.o.b., Pittsburg. M		175.00
Clay, China—Am. com., ex-dock, N. Y.	lg ton	8.00
Am. best, ex-dock, N. Y.	"	9.00
English, common	"	12 00
Best grade	"	17 00
Fire Clay, ordinary	sh. ton	4.25
Best	"	6.00
Slip Clay	"	5.00
Coal Tar Pitch	gal.	.08
Cobalt—Carbonate	lb.	1.75
Nitrate	"	1.50
Oxide—Black	"	2.26@2.36
Gray	"	2.28@2.40
Smalt, blue ordinary	"	.25
Best	"	.30
Copperas	100 lbs.	72½
Copper—Carbonate	lb.	.18
Chloride	"	.25
Nitrate, crystals	"	.35
Oxide, com'l	"	.19
Cream of Tartar—Crys.	"	.21¾@.22
Powdered	"	.22@.22½
Cryolite	"	.06½
Explosives—		
Blasting powder, A. 25 lb. keg		2.50
Blasting powder, B.	"	1.25
"Rackarock," A.	lb.	.25
"Rackarock," B.	"	.18
Judson R.R. powder	"	.10
Dynamite (30% nitro-glycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine)	"	.15
(50% nitro-glycerine)	"	.16½
(60% nitro-glycerine)	"	18
(75% nitro-glycerine)	"	.21
Glycerine for nitro (32 2-10° Be.)	"	.14@.14½
Feldspar—Ground	sh. ton	8.00@9.00
Fluorspar—In bulk.		
Am. lump, 1st grade	"	12.40
2d grade	"	11.90
Gravel & crushed, 1st g	"	11.40
2d grade	"	10.90
Ground, 1st grade	"	15.90
Foreign, lump	"	8.00@12.00
Ground	"	11.50@14.00
Fuller's Earth—Lump.	100 lbs.	.75
Powdered	"	.85
Refined lump	"	1.25
Graphite—Am. f. o. b. Providence, R.I. lump.	sh. ton	8.00
Pulverized	"	30.00
German, lump	lb.	.01¼
Pulverized	"	.01½@.02
Ceylon, common	"	.03½
Pulverized	"	.04@.08
Italian, pulv	"	.01¼
Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00
Infusorial Earth—Ground. American, best	"	20.00
French	"	37.50
German	"	40.00
Iodine—Crude	100 lbs.	2.45
Iron—Muriate	lb.	.05
Nitrate, com'l	"	.01½
True	"	.03½
Oxide, pure copperas col	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@.03
Kaolin—(See Clay, China).		
Kryolith—(See Cryolite.)		
Lead—Acetate, white	lb.	.07
Com'l, broken	"	.06½
Brown	"	.05½
Nitrate, com'l	"	.06½
" gran.	"	.8¼
Lime—Com., ab. 250 lbs	bbl.	.70
Finishing	"	.80
Magnesite—Greece. Crude (95%)	lg. ton	6.50@7.00
Calcined	sh.ton	14.00@15.00
Bricks	M.	170.00
Am. Bricks, f o.b., Pittsburg	"	175.00
Magnesium—		
Carbonate, light, fine pd	lb.	.03¾
Blocks	"	.06@.09
Chloride, com'l	"	.01¾
Fused	"	.20
Magnesium—		
Nitrate	lb.	$0.60
Sulphate	100 lbs.	.90
Manganese—Crude-pow'd 75@75% binoxide	lb.	.01¼@.01½
Crude, pow'd 75@85% binoxide	"	.01½@.02½
85@90% binoxide	"	.02½@.03¼
90@95% binoxide	"	.02¾@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50%, Foreign	unit	.26¾
Domestic	"	.30
Marble—Flour	sh. ton	5.50@6.00
Mercury—Bichloride	lb.	.77
Mica—N. Y. gr'nd, coarse	"	.03¼@.04
Fine	"	.05@.05½
Sheets, N. C., 2x4 in	"	.30
3x3 in	"	.80
3x4 in	"	1.50
4x4 in	"	2.00
6x6 in	"	3.00
Scrap, f.o.b., Dillsboro, N. C.	sh. ton.	25.00
Mineral Wool—		
Slag, ordinary	sh. ton	19.00
Selected	"	26.00
Rock, ordinary	"	32.00
Selected	"	40.00
Monazite—92%	"	140.00
Nickel—Oxide, No. 1	lb.	1.00
No. 2	"	.60
Sulphate	"	.20@.21
Oils—Black, reduced 29 gr.: 25@30 cold test	gal.	.09¾@.10¼
15, cold test	"	.10¾@.11¼
Zero	"	.11¾@.12¾
Summer	"	.09¼@.09¾
Cylinder, dark steam ref	"	.08¾@.10¾
Dark filtered	"	.11¾@.16¼
Light filtered	"	.14¾@.17¾
Extra cold test	"	.21¾@.26¾
Gasoline, 86°@90°	"	.16@.21
Naphtha, crude 68@72°	bbl.	9.55
"Stove"	gal.	.12
Linseed, domestic raw	"	.60@.63
Boiled	"	.65
Calcutta, raw	"	.85
Graphite, lubricating, Am. dry	lb.	.10
In oil	"	.12
Axle grease	"	.08½@.10
Wood grease	"	.05@.06
Ozokerite—Foreign	"	.12
Paints and Colors—		
Chrome green, common	"	.05
Pure	"	.18
Yellow, common	"	.10
Best	"	.25
Silica Graphite, thick	"	.12
Thinned	gal.	1.15
Lampblack, com'l	lb.	.03
Refined	"	.07
Litharge, Am. powd.	"	.05½@.06
English flake	"	.09½
Glassmakers, Foreign	"	.06½
Metallic, brown	sh. ton	19.00
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.04¾
French, washed	"	.01¼@.02½
Orange mineral, Am.	"	.07¾@.08
Foreign, as to make	"	.08@.10½
Paris green, pure, bulk.	"	.12½
Red lead, American	"	.06½
Foreign	"	.08¼
Shellac, "D. C."	"	.28
Native	"	.15
Turpentine, spirits	gal.	.44½@.45
Ultramarine, best	lb.	.25
Vermilion, Amer. lead	"	.10@.15
Quicksilver, bulk	"	.64
English, imported	"	.80
White lead, Am., dry	"	.05¾
English	"	.06½@.08¾
Whiting, common	100 lbs.	.42
Gilders	"	.54
Zinc white, Am., ex. dry	lb.	.04¼@.04¾
American, red seal	"	.07¼@.07¾
Green seal	"	.07¾@.08
Foreign, red seal, dry	"	.07¾@.08⅝
Green seal, dry	"	.08¾@.09⅞
Potash—Caustic, ord.	"	.04½@.05
Elect. (90%)	"	.06½
Potassium—		
Bicarbonate cryst.	"	.08¼
Powdered or gran.	"	.14
Bichromate, Am.	"	.08½
Scotch	"	.08½
Carbonate, hydrated	"	.04¼
Calcined	"	.04
Chromate	"	.35
Cyanide (98@99%)	"	.28
Iodide, bulk	"	2.30
Permanganate, pure cr.	"	.11¼@.12½
Prussiate, yellow	"	.14⅝@.15
Red	"	.37
Silicate	"	.06
Sulphide, com'l	"	.10
Quartz—(See Silica).		
Rosin—		
Com. strained (280 lbs.)	bbl.	1.55
Best strained	"	3.40
Medium	"	1.95
Salt—		
N Y com, fine	sh. ton	2.00
N. Y. agricultural	"	1.50
Saltpeter—		
Crude	100 lbs.	3.55
Refined	"	4.12½
Silica—Best foreign	lg. ton	10 00@11.00
Ground quartz, ord.	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75
Silicon—Carbide	lb.	.05
Silver—	oz.	$0.65
Chloride	"	.40
Nitrate	"	.85@1.10
Oxide	sh. ton	7.50@8.75
Slate—Ground, black	"	20.00
Ground, red and olive.	lb.	.04¾
Sodium—Acetate, com'l.	"	.06¾
Bichromate	"	.09@.09¼
Chlorate, com'l	100 lbs.	1.80
Hyposulphite, Am.	"	2.10@2.20
German	lb.	.08
Nitrite, 96@98%	"	.45
Peroxide	"	.02½
Phosphate	"	.11¼
Prussiate	"	.05
Silicate, conc	"	.02¼
com'l	"	.70
Sulphate, com'l	100 lbs.	.03
Gran., puri'd	lb.	.01¾
Sulphide	"	.02¼
Sulphite crystals	"	.35
Tungstate, com'l	"	.06½@.06⅝
Strontium—Nitrate	"	1.75
Sulphur—Roll	100 lbs.	1.80
Flour	"	2.05
Flowers, sublimed	"	13.75
Talc—N. C., 1st grade	sh. ton	8.00@9.00
N. Y., Fibrous	"	1.25
French, best	100 lbs.	1.75
Italian, best	"	2.40
Tar—Regular	bbl.	4.60
Oil barrels	"	.10
Tin—Bichloride	lb.	.09½@.10
Crystals	"	.24½
Muriate, 36°	"	.09
52°	"	.15
Oxide, white, ch. pure	"	.40
Uranium—Oxide	"	2.25@3.00
Zinc—Metallic, ch. pure	"	.07¼@.09½
Carbonate	"	.15
Chloride	"	.05
Dust	"	.07½@.07¾
Sulphate	"	.02@.02¼

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

	Cust. Meas.	Price.
Barium—Amalgam	grm.	$1.19
Electrol	"	5.71
Beryllium—Powder	"	5.95
Crystals	"	9.04
Nitrate (N Y.)	oz.	1.50
Boron—Amorphous, pure	grm.	.19
Crystals, pure	"	1.43
Nitrate (N. Y.)	lb.	1.50
Cadmium—Sticks	kg.	1.55
Sheets	"	2.83
Granulated	"	2.38
Powder	"	1.90
Calcium—Elect	grm.	4.28
Cerium—Fused	"	2.02
Nitrate (N. Y.)	oz.	1.25
Chromium—Fused, Elect.	kg.	5.95
Pure powder 95%	"	1.79
Chem. pure cryst	grm.	.20
Cobalt—(98@99%)	kg.	6.66@8.33
Pure	"	30.94
Didymium—Powd.	grm.	3.81
Fused, Elect.	"	5.47
Nitrate (N. Y.)	oz.	2.50
Erbium	grm.	3.09
Nitrate (N. Y.)	oz.	2.50
Germanium—Powder	grm.	33.32
Fused	"	35.70
Glucinum—Powder	"	5.95
Crystals	"	9.04
Nitrate (N. Y.)	oz.	2.75
Indium	grm.	3.57
Iridium—Fused	"	1.07
Powder	"	.95
Lanthanum—Powder	"	4.28
Electrol, in balls	"	9.04
Nitrate (N. Y.)	oz.	2.25
Lithium	grm.	2.38
Nitrate (N. Y.)	oz.	.60
Magnesium—Ingot	kg.	6.19
In wire or ribbon	"	3.99
Powdered	"	5.95@7.14
Sheet	"	9.04
Molybdenum—Fused	grm.	.15
Powder, 95%	kg.	2.62
Niobium	grm.	3.81
Osmium	"	.94
Palladium—Wire	"	.86
Sponge	"	.62
Potassium—In balls	kg.	17.85
Rhodium	grm.	2.38
Rubidium—Pure	"	4.76
Ruthenium—Powder	"	2.38
Rutile—Crude	kg.	.43
Selenium—Com'l powder	"	26 28
Sublimed powder	"	35.70
Sticks	"	28.56
Silicium—Com'l	"	28.56
Chem. pure crystals	"	59.50
Amorphous	"	27.36
Sodium (N. Y.)	lb.	.65
Strontium—Electrol	grm.	6.19
Tantalium—Pure	"	3.57
Tellurium—Ch. p. sticks.	kg.	107.00
Chem. pure powder	"	83.30
Thallium	"	26.18
Thorium—Nitrate 49@50% (N. Y.)	lb.	5.00
Titanium	kg.	47.60
Uranium	"	190.40
Nitrate (N. Y.)	oz.	.25
Wolfram—Fused, elect.	kg.	238.00
Powder, 95@98%	"	1.43
Chem. pure powder	"	6.43
Yttrium	grm.	3.33
Nitrate (N. Y.)	oz.	2.75
Zirconium—Com'l	kg.	119.00
Nitrate (N. Y.)	oz.	.75

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to **Nov. 21.** Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. **See also Market Reviews.**